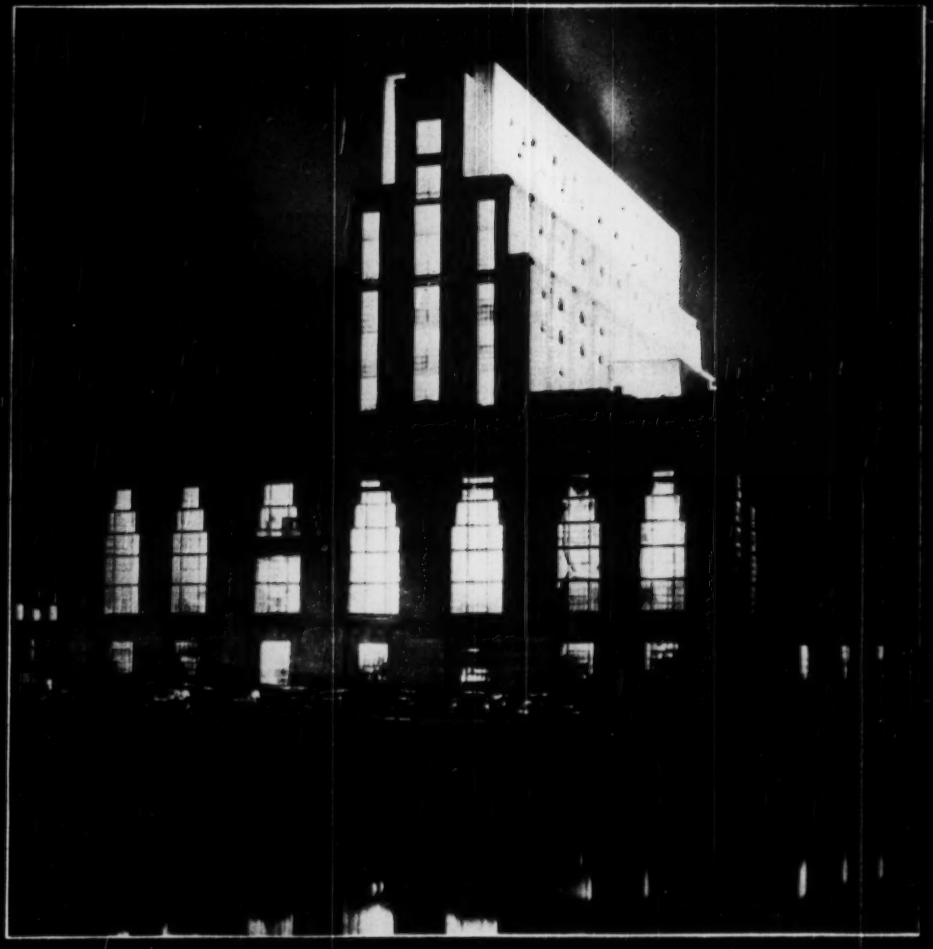
ENGINEERING NEWS-RECORD



A McGRAW-HILL PUBLICATION

Welded Steel Smokestacks for power plants

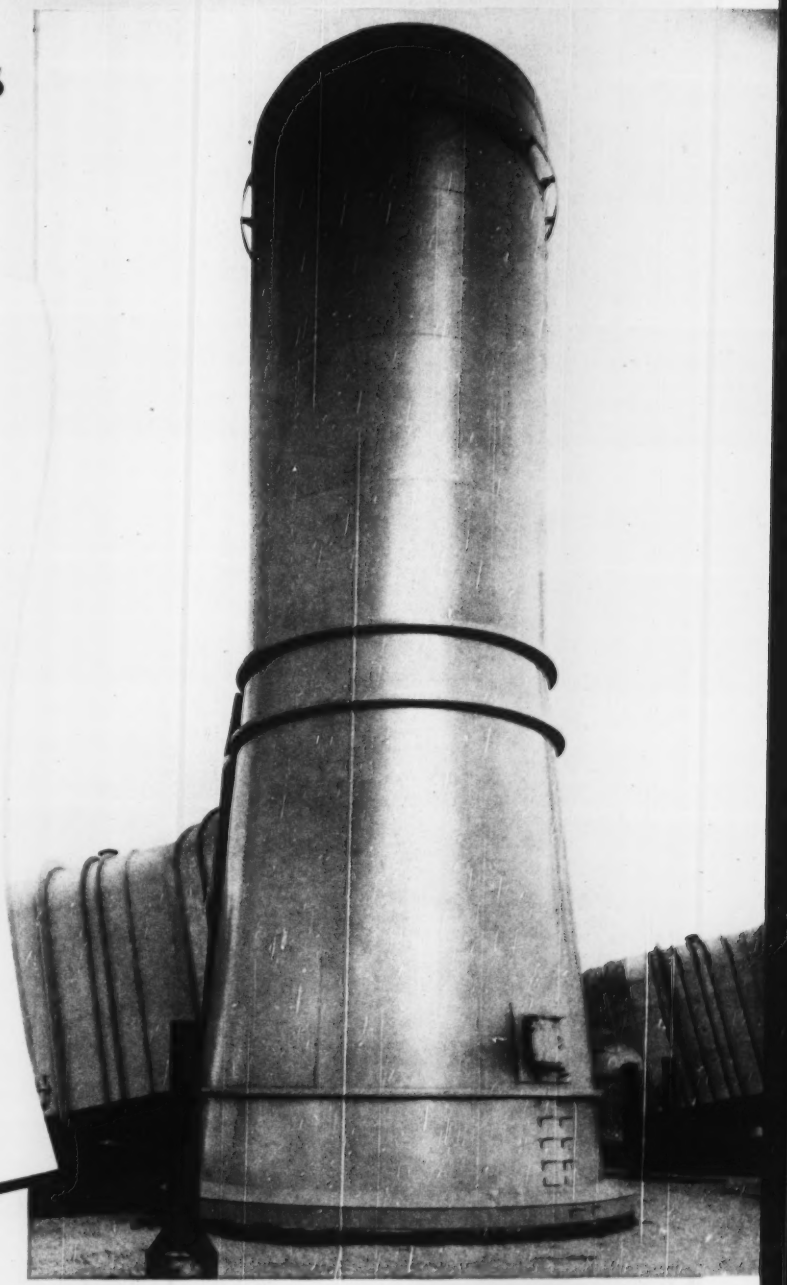
one of the special Horton® steel plate structures serving modern industry

There are two reasons why welded steel smokestacks are good examples of the type of steel plate structures we can furnish to meet the requirements of power generating stations, mines, mills, and industrial plants of all kinds.

First, we have the ability and experience to provide the best design to meet your specific requirements. This experience is augmented by years of association with industrial, municipal and government engineers on all types of construction projects.

Second, we have the adequate shop fabrication facilities, and the experienced erection crews it takes to fabricate and erect, at reasonable cost, not only smokestacks, but all other types of steel plate structures. We are equipped to x-ray vessels of all sizes, and to stress-relieve shop-built structures up to 13 ft. in diameter at Birmingham and up to 13 ft. 6 in. diameter at Chicago and Greenville, Pa. Our shop technicians and field crews are experienced in fabricating and welding carbon and alloy steels.

Write our nearest office for quotations whenever you need self-supporting steel smokestacks or steel plate work of any kind.



Right: 16-ft. diam. by 80-ft. self-supporting welded steel smokestack at the C. R. Huntley Station No. 2 of the Buffalo-Niagara Electric Corporation.

CHICAGO BRIDGE & IRON COMPANY

Atlanta, 3 ..... 2125 Healey Building
Birmingham, 1 ..... 1520 North 50th Street
Boston, 10 ..... 1012—201 Devonshire Street
Chicago, 4 ..... 2101 McCormick Building
Cleveland, 15 ..... 2201 Guildhall Building
Detroit, 26 ..... 1506 Lafayette Building
Houston, 2 ..... 2109 National Standard Building
Havana ..... 402 Abreu Building
Los Angeles, 17 ..1511 General Petroleum Building
New York, 6 .....3311—165 Broadway Building
Philadelphia, 3 ..1623—1700 Walnut St. Building
Salt Lake City, 4 ....512 West 17th South Street
San Francisco, 11 ..1230—22 Battery St. Building
Seattle, 1 ..... 1312 Henry Building
Tulsa, 3 ..... 1617 Hunt Building

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE

In Canada: HORTON STEEL WORKS, Limited, FORT ERIE, ONT.

PIONEERING *in Hydraulic* POWER –

The Pioneers - those who devoted their lives to the harnessing of one of nature's mightiest forces - water - contributed greatly to this nation's progress! For 75 years, we have built turbines for high, medium and low heads, many types of valves, hoists and gates, pumps, trash rack rakes and kindred hydraulic equipment. Put your problem up to us.

S. MORGAN SMITH Co.

YORK. PENNA. U.S.A.

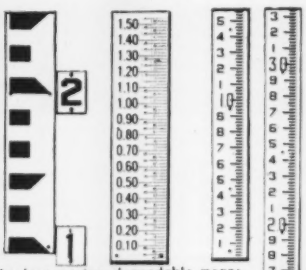
ENGINEER'S FILE ON HYDROGRAPHIC INSTRUMENTS

STEVENS
HYDROGRAPHIC INSTRUMENTS

A wide range of precision measuring instruments to record and indicate head, flow, and totalize flow; for waterworks, sewerage, irrigation and industrial uses. New, low cost methods of liquid level recording.

These methods and instruments for all liquid measuring problems are listed in a complete Engineer's Data folder for your convenience. This information folder is *FREE* and can be had by filling in the coupon below. The folder includes data on instruments to record fluctuations of liquids in oil production, stream gaging, deep wells, sewage, irrigation, etc., both accurately and economically.

STAFF GAGES



An inexpensive, dependable means of measuring liquid levels. They are designed so as not to affect the flow of liquid. Porcelain enameled for easier reading . . . accurately graduated in English or metric system . . . will not rust or discolor. Staff gages are available in a wide range of lengths and widths — Staff gages for as little as $1.00. Complete information in the Engineer's Data Folder.

Leupold and Stevens pioneered the field of water level recording 43 years ago, and since then have developed precision measuring instruments of all types and descriptions to meet many specific needs.

Write for the complete file. There may be a measuring device that exactly suits your specific requirements. Use the coupon below.

Please send me the *Engineer's Data Folder* with complete information on Hydrographic instruments.

Name_____

Address_____

City_____ State_____

LEUPOLD & STEVENS INSTRUMENTS, INC.
4445 N.E. Glisan • Portland 13, Oregon

ENGINEERING NEWS-RECORD

VOLUME 144 APRIL 6, 1950 NO. 14

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

Grooved Nails Strengthen House Frames . . . . . E.G. Stern 32

Dredge Works in Ocean to Rebuild Calif. Beach 34

Tree-Like Laboratory for Wax Research 35

Best Bit Choice Depends on the Rock . . . . . C. L. Bush 38

How to Control Rats 39

Perspective—How to Get Pollution Abated 112

DEPARTMENTS

Construction Week 17
Scoreboard 19
Editorials 21
News of the Week 23
Reader Comment 46
Book Reviews 47
Field and Office 48
Developments Abroad 49
Municipal Affairs 51
Men and Jobs 52
Education and Research 55
Elections and Activities 58
Obituaries 62
Materials Prices 65
Construction Reports 72
New Products 98

Number of Copies of this issue printed 45,795

Managing Editor—Eugene E. Halmos, Jr.

Associate Editors—*New York*, V. T. Boughton (senior associate), J. C. Bamstead, R. H. Dodds, R. N. Larkin, F. S. Merritt; *Cleveland*, J. R. Carr; *San Francisco*, N. A. Bowers, L. L. Wise; *Washington*, V. B. Smith.

Assistant Editors—*New York*, Melvin Dean, Arthur J. Fox, Jr., T. D. MacGregor.

Staff Assistants—Ruth Imler, *Research*; Ethel Lyon, *Makeup*; Henry Lefer, *Production*; Helri Pratt, *Layout*; Louise Barker, Ruth McCarthy, Madalene Smith, *Editorial*.

Business News—Elsie Eaves, *Manager*; E. M. Hubel, Jane Lucia, J. A. Mahoney, Frederick Lee Moore, Jr., M. W. Roessler, M. Wetzel.

Contributing Editor—Edward J. Cleary.

Domestic News Bureau—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 21 cities in the United States, Canada and Mexico.

Foreign News Bureaus—London, Frankfurt, Paris, Moscow, Tokyo, Melbourne, Rio de Janeiro, Mexico City. *Correspondents*—Athens, Rome, Caracas, Buenos Aires, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

ROBERT F. BOGER
Publisher

Member ABC Member ABP

April 6, 1950 ENGINEERING NEWS-RECORD Vol. 144—No. 14

Publication Office—99-129 N. Broadway, Albany 1, N. Y.

Executive and Editorial Offices—330 West 42nd St., New York 18, N. Y.

Copyright 1950 by McGraw-Hill Publishing Co., Inc. All rights reserved. Published every Thursday by the McGraw-Hill Publishing Co., Inc. James H. McGraw (1860-1948), founder. CURTIS W. McGRAW, President; WILLARD CHEVALIER, Executive Vice President; JOSEPH A. GERARDI, Secretary and Treasurer; EUGENE DUFFIELD, Senior Vice President, Publications Division; NELSON BOND, Vice-President and Director of Advertising; J. E. BLACKBURN, JR., Vice-President and Director of Circulation. Cable address, McGraw Hill New York.

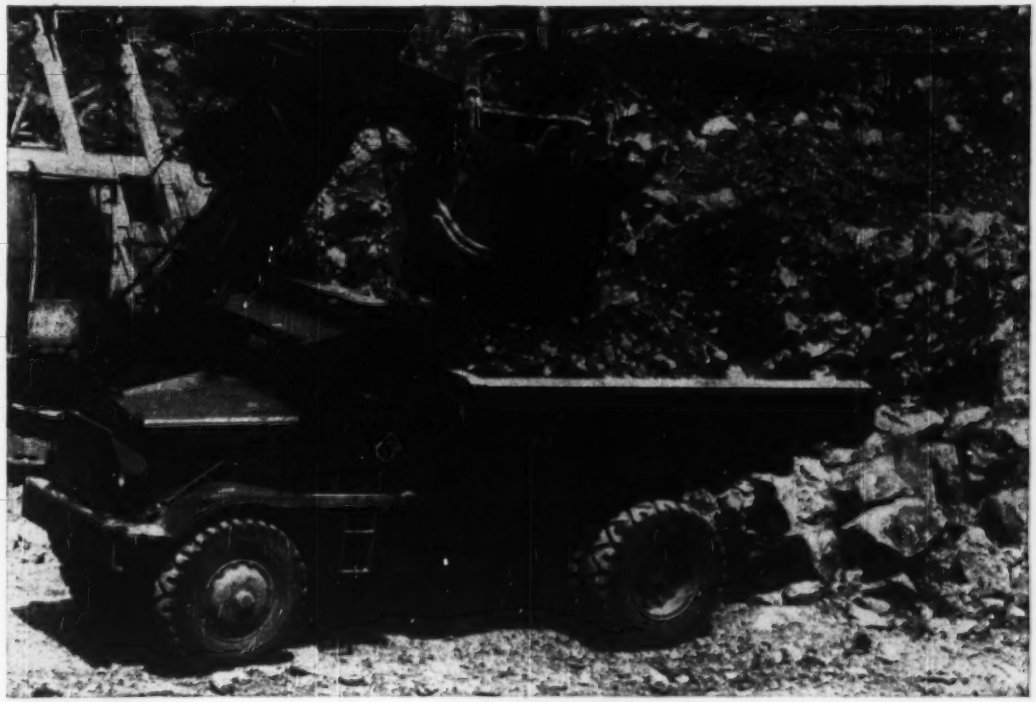
Subscriptions: (1 yr., 2 yr., 3 yr.) U. S. and possessions $6, $9, $12; Pan America, $10, $16, $20; Canada, $8, $12, $16; All others, $20, $30, $40.

Address all communications about subscriptions to Director of Circulation. Price 30¢ per copy.

Please indicate position and company connection on all subscription orders.

Entered as Second Class matter October 29, 1936, at the Post office at Albany, N. Y., under Act of March 3, 1879. Printed in U. S. A.

B.F.Goodrich



BFG users report: Continued savings —thanks to double bruise protection

B. F. GOODRICH *Universals* were reported by one operator to be in good condition after daily quarry service for over 21 months. Another operator reports over 4500 service hours from Universals against only 1600 hours from another make in identical service. Still another report told of tires that were still "young" at 3200 hours and probably good for thousands more. These actual user reports spotlight the great difference between various makes of off-the-road tires.

When *results* are measured, BFG tires always stand high. There are many reasons for the continuing top performance of B. F. Goodrich tires. For example, notice the tread on the Universals in the picture above. It's designed to give traction both ways. More than that, it is made of specially compounded rubber . . . armor against sharp rocks and other tire killers.

Also, BFG tires have double bruise protection in the form of a *double nylon shock shield* . . . layers of nylon cord built between the tread and the body plies. Under impact, the strong, elastic nylon shields the cord body. And there are two shields for double protection!

Only B. F. Goodrich gives you the added protection of the nylon shock shield; the added savings from (1) longer tire life (2) increased bruise resistance (3) less danger of tread separation (4) more recappable tires. Nylon shock shield costs no extra—you pay no premium.

There's a specially designed *BFG off-the-road tire for every need. See your B. F. Goodrich dealer or call *The B. F. Goodrich Company, Akron, Ohio.*

Typical example: New ALL-NYLON tire for tough construction projects, quarry work, strip mining, etc. In all tests not a single tire blew out, not one flex break occurred!

it's made of sheet aluminum . . . it's worth many times its weight in gold

3 CUBIC YARD MIXER
GUARANTEED TO HOLD, MIX AND AGITATE ITS RATED CAPACITIES AND CERTIFIED TO COMPLY WITH TRUCK MIXER MANUFACTURERS BUREAU STANDARDS AS APPROVED BY N.R.M.C.A.
NATIONAL READY MIXED CONCRETE ASSOCIATION
NRMCA
4 1/4 CUBIC YARD AGITATOR
N.R.M.C.A. REGISTRY Nº D

This little plate, on the truck mixer that supplies your job, guarantees its capacity to thoroughly *mix* and *agitate* as well as to deliver a full rated load.

This means that it has the proper drum design, accurate water control and speed of revolution, and the full specified amount of *free mixing space* proved necessary to produce quality concrete.

It is one simple, sure protection which the $250,000,000 ready-mixed concrete industry offers architects, engineers and other users against questionable concrete delivered by non-standard truck mixers.

Insist upon this rating plate on the truck mixers that supply *your* job.

* *The Bureau rating plate is available to any manufacturer who meets its quality standards and requirements.*

Affiliated with The National Ready Mixed Concrete Association

BLAW-KNOX DIVISION
Pittsburgh, Pa.
CHAIN BELT COMPANY
Milwaukee, Wis.
CONCRETE TRANSPORT MIXER CO.
St. Louis, Mo.
THE JAEGER MACHINE COMPANY
Columbus, Ohio
WORTHINGTON PUMP & MACHINERY CORP.
Dunellen, N. J.
THE T. L. SMITH COMPANY
Milwaukee, Wis.

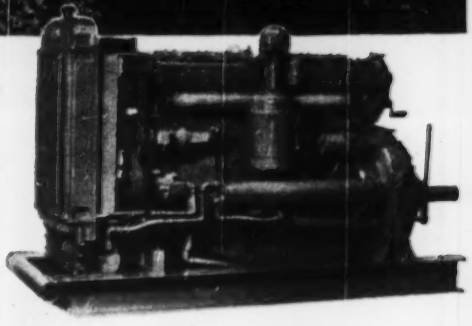
Truck Mixer Manufacturers Bureau

means more output with MURPHY DIESELS

OWNERS everywhere find that the instantaneous response to load changes of Murphy Diesels means more output and more profit. Their easy starting, complete dependability and unequalled fuel economy, add to their popularity because of the boost they give to the profit side of the ledger. Here's what John S. Wenger of Wenger and Sensening, Paradise, Pa., has to say, *"The easy starting on cold mornings and the instant response of the governor to load changes are features we like particularly, while the dependability of the engines leaves nothing to be desired."*

Plan now to improve your profit picture by getting full details on Murphy Diesel Power from your Murphy Diesel Dealer or write direct.

MURPHY DIESEL COMPANY
5311 W. Burnham Street • Milwaukee 14, Wisconsin

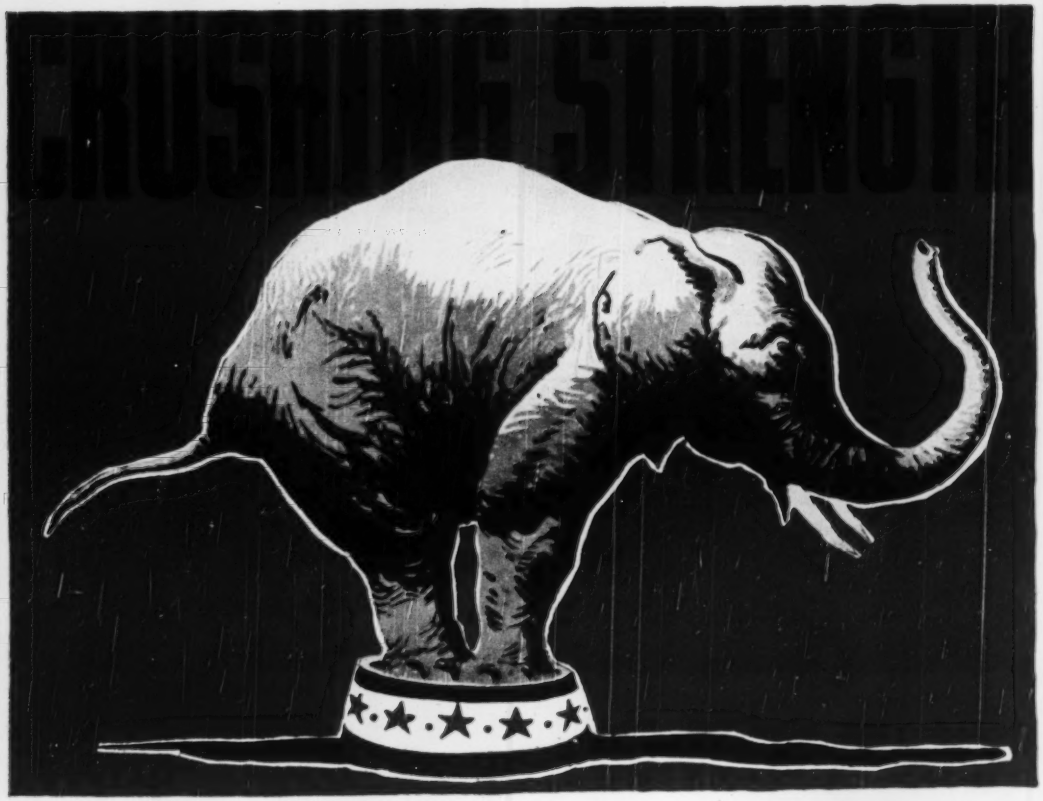


MURPHY DIESEL

Heavy duty power

for construction

Murphy Diesel Engines and Power Units for construction, 90 to 220 H.P. Generator Sets, 60 to 133 K.W.



Without crushing strength—or, for that matter—without all of the strength factors listed opposite—no pipe laid 100 years ago in *city streets* would be in service today. But, in spite of the evolution of traffic from horse-drawn vehicles to heavy trucks and buses—and today's vast complexity of subway and underground utility services—cast iron gas and water mains, laid over a century ago, are serving in the streets of more than 30 cities in the United States and Canada. Such service records prove that cast iron pipe combines all the strength factors of long life with ample margins of safety. No pipe that is provably deficient in any of these strength factors should ever be laid in city streets. Cast Iron Pipe Research Association, Thos. F. Wolfe, Engineer, 122 So. Michigan Ave., Chicago 3.

CAST IRON PIPE

Strength factors of Long Life !

No pipe that is provably deficient in any of these strength factors should ever be laid in city streets

CRUSHING STRENGTH

The ability of cast iron pipe to withstand external loads imposed by heavy fill and unusual traffic loads is proved by the Ring Compression Test. Standard 6-inch cast iron pipe withstands a crushing weight of more than 14,000 lbs. per foot.

BEAM STRENGTH

When cast iron pipe is subjected to beam stress caused by soil settlement, or disturbance of soil by other utilities, or resting on an obstruction, tests prove that standard 6-inch cast iron pipe in 10-foot span sustains a load of 15,000 lbs.

SHOCK STRENGTH

The toughness of cast iron pipe which enables it to withstand impact and traffic shocks, as well as the hazards in handling, is demonstrated by the Impact Test. While under hydrostatic pressure and the heavy blows from a 50 pound hammer, standard 6-inch cast iron pipe does not crack until the hammer is dropped 6 times *on the same spot* from progressively increased heights of 6 inches.

BURSTING STRENGTH

In full length bursting tests standard 6-inch cast iron pipe withstands more than 2500 lbs. per square inch internal hydrostatic pressure, which proves ample ability to resist water-hammer or unusual working pressures.

CAST IRON

SERVES FOR CENTURIES

Losing your shirt on maintenance?

IF a large part of maintenance expense goes for engine repairs, chances are, Quaker State HD Oil could save you money!

Quaker State HD Oil is specially made to prevent wear in heavy duty use. Made from 100% pure Pennsylvania grade crude oil, it's refined with the most modern processing equipment and with technical skill unsurpassed in the industry.

Even under toughest operating conditions, it keeps its body, lubricates thoroughly, protects every friction surface. It helps prevent formation of sludge, gum, varnish—actually *cleans* as it lubricates!

There is no finer engine lubricant, so switch over to Quaker State HD Oil and keep 'em rolling!

QUAKER STATE HD OIL

AND SUPERIOR LUBRICANTS

Use Quaker State HD Oil for trucks, buses, taxis, tractors.
Use Quaker State Motor Oil for passenger cars.

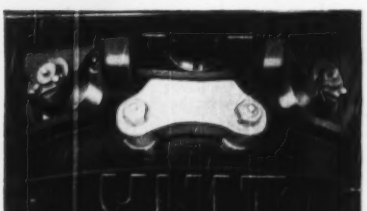
QUAKER STATE OIL REFINING CORPORATION, OIL CITY, PA.

Announcing THE New UNIT 614 ½ Yd.

a HEAVIER and BETTER machine *...at no increase in price!*

NEW SHOVEL ATTACHMENT

Shovel boom is a heavy weldment with sturdy box-section side members. Cast-steel hinges give added strength to boom foot. Dipper-stick is a single, square structural steel section. The cast-steel saddle-block is lined with adjustable and replaceable wear-plates. Direct crowding action is provided by the UNIT chain-crowd mechanism, eliminating cables, racks and pinions. A special equalizer insures even pull on both strands of the double crowd-chain.



TWIN HOOK-ROLLERS

Twin hook-rollers are equalized and mounted on the front and rear of the rotating frame. Quickly adjusted by means of eccentric pin. There are 4 upper-load rollers plus 4 hook-rollers. All rollers are conical shaped and made of drop-forged steel.

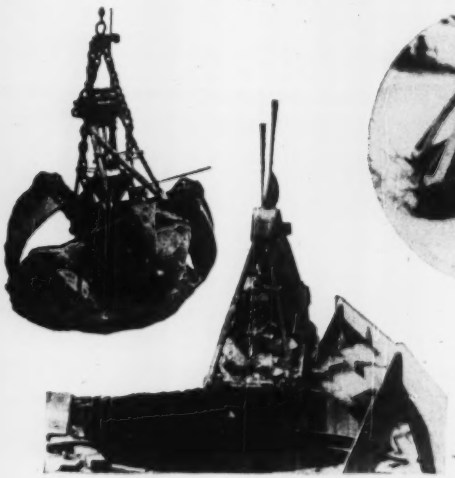
The completely new UNIT 614 — ½ yard offers the same rugged construction usually found only in machines of greater capacity. Twenty-five years of engineering skill and craftsmanship have gone into the production of this model — an outstanding product resulting from specializing in sizes under one yard. Compare its construction features and design with any ½ yard machine in the market today. We are confident that your judgment will favor the UNIT 614.

Get the facts — Write today for literature.

UNIT CRANE & SHOVEL CORP.
6315 W. Burnham Street • Milwaukee 14, Wisconsin, U. S. A.

SHOVELS • DRAGLINES • CLAMSHELLS • CRANES • TRENCHOES • MAGNETS

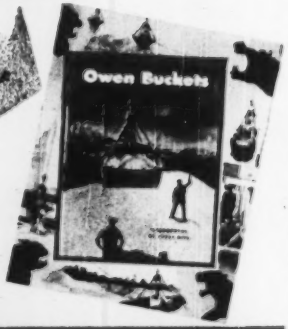
A 5752-UP-C



Choose from 99 types, sizes and capacities of Owen Buckets and Grapples.

GET THIS NEW CATALOG OF

Owen Buckets and Grapples



THE OWEN BUCKET CO.
6610 BREAKWATER AVE., CLEVELAND 3, OHIO
Branches:

NEWS BRIEFS

No Technocrats, Please – A panel formed to advise Harvard as to the best use of the income from a $15,000,000 bequest by the late Gordon McKay has recommended the training of a new type of "super" engineer. Dr. Vannevar Bush is chairman of the panel, which says "there is an increasing need for men of broader training in engineering and applied science. Training of engineers of this caliber is greatly underestimated."

Needed: One Law—Ohio's Governor Lausche has asked Highway Director T. J. Kauer to figure out a plan whereby the state can acquire land for future highway construction. It can only acquire sites for immediate use now, while cities are not so restricted. The problem came to a head as a result of a Cleveland tax sale of properties that had been planned ultimately for highway use.

Get a Survey, Anyway—North Carolina's toll-road survey committee has authorized a $30,000 preliminary engineering study to determine whether the proposed north-south highway would be feasible. Cost will be paid by a Durham investment banker, who won't be reimbursed unless the road is built. The attorney general says existing legislation would permit construction of the road. But Statistics and Planning Engineer J. S. Burch, of the state highway department, wonders whether there's enough traffic to let the road pay for itself.

One More for the Roads—Massachusetts' Governor Dever predicts the legislature will approve another $100 million bond issue for highway improvement this year, matching that approved a year ago. Road improvements resulting from the program, he said, should reduce auto-insurance rates from $7 to $20 yearly per car.

Dame Beats Dam—Walla Walla, Wash., Chamber of Commerce wanted only the best in billboard illustrations inviting tourists. So it tested sample illustrations—one showing a pleasing young female, the other a panorama of McNary Dam, under construction near the city. Dame won.

Bridge Bonds OK'd—The Mississippi Senate has approved a bill authorizing the sale of revenue bonds for a new bridge to carry U. S. Route 90 across Bay St. Louis, to replace one partially

(Continued on page 14)

canvas at its best

resists

FIRE
WATER
WEATHER
MILDEW
WEAR

FIRE-CHIEF® products are manufactured under U. S. Patents No. 2,044,176, No. 2,299,612 and other patents, all owned by William E. Hooper & Sons Co.

WM. E. HOOPER & SONS CO.

General Sales Offices:

New York
330 Broadway

PHILADELPHIA
Juniper & Cherry Sts.
Hooperwood Mills: Woodberry, Baltimore, Md.

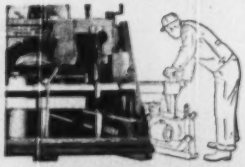
Chicago
300 W. Adams St.

cost-saving tools

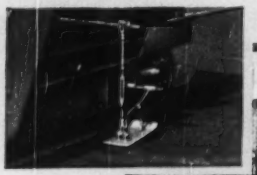
Straightedge Runners carry screed, insure smooth, accurate lay. All traction on subgrade, ahead of the new-laid material. Telescopic screw shaft effects quick width changes.

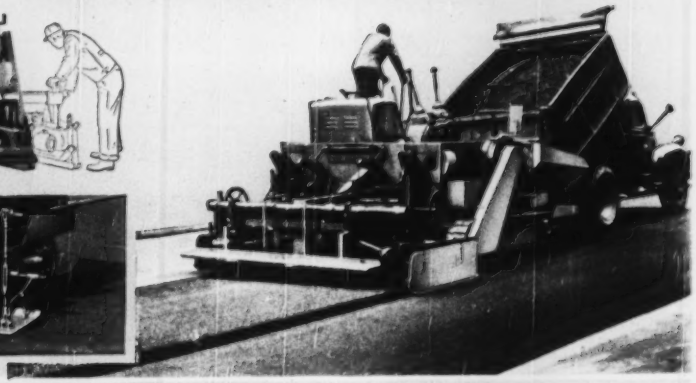
Lay up to 25' with 2 low-cost spreaders in tandem. Roll full width. Keep your higher priced paver busy laying top. Machine blends perfect joints.

Twirl Wheel to Change Width: Any width from 5' 6" to 12' 6" without adding or removing parts.



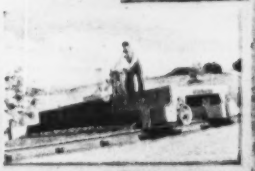
12' Straightedge Runners equalize subgrade irregularities. Automatically controlled to match established grade line.

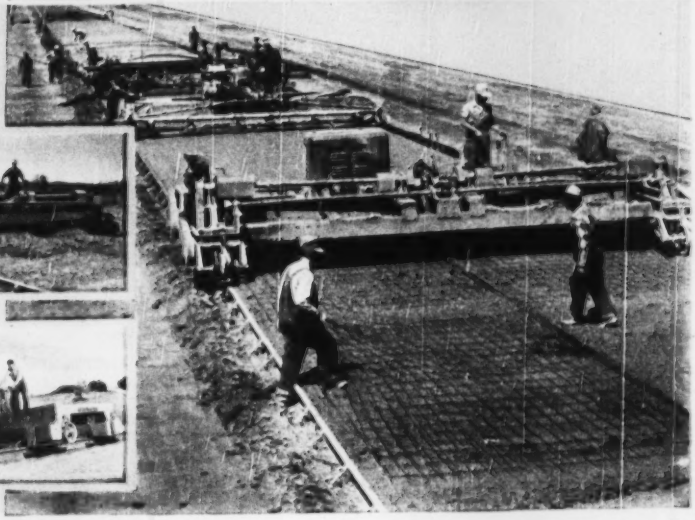




Re-Mixing, Compacting Spreader Screw positively eliminates all segregation and resulting honeycomb. Oscillating screed follows strike-off and accurately meters material to the finisher.

Diagonal Screed on Type "X" Finisher works material right against upper form on steepest curves. No other finisher can do this.





for successful bidders

Jaeger paver-type aggregate spreader

The most needed new development in paving machinery . . . a low cost, self-propelled spreader that operates entirely on the subgrade or compacted course (no weight or traction displacing the loose new material) — Accurately lays *all* base and surface aggregates up to 4" stone, plant-mixed stabilized soil or free-flowing bituminous mixtures, up to 10" thickness and up to 12½' widths (25' width in tandem) — Handles equal or bigger daily tonnage than machines that cost twice its price.

Jaeger Model BP-5 precision bituminous paver

The automatic-leveling paver that lays all types of bituminous materials up to 12½' with almost instant width adjustability, without adding or removing parts. Fast oscillating bevel-tooth screeds work material to uniform density not possible with tamping. All traction and heavy load are confined to subgrade (no premature sealing.) Machine automatically matches adjacent course, curb or other grade line and can pave flush to curbs or gutters. Teams with the Jaeger Aggregate Spreader for fast, labor-saving production of high-type roads, streets, airports — at low costs not possible with older equipment.

Jaeger concrete spreader and finisher "teams"

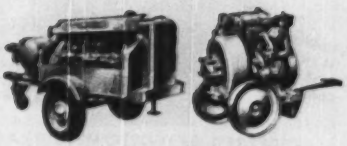
for labor-saving mass production behind big pavers

Type "X" Diagonal Screed Finisher — directly saves one to two shovelers because its diagonal rear screed can finish flush to the upper form on super-elevated curves and pitched slab. Increases accuracy on all work and can finish faster without tearing stiff concrete.

Jaeger Combination Screw-Screed Spreader — remixes, spreads, strikes off, *then, by the pass of its oscillating 12" screed, accurately meters material to your finishing machine.* Eliminates both the excess ahead of the finisher that causes high spots and the deficiencies that require costly carry-back. Insures fast, steady production. Has saved second finisher on high production paving. Can also complete concrete base for bituminous surfaced streets.

Ask your Jaeger distributor or write us for individual catalogs.

The Jaeger Machine Company
Columbus 16, Ohio

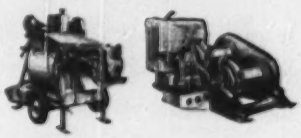


"New Standard" Jaeger Compressors Do 4 Days' Work in 3

From the Model 75, which runs a heavy breaker at full pressure, to the Model 600 for two big wagon drills, Jaeger's increased ratings supply the air you need to run tools at full 90 lbs. pressure instead of 70 lbs. — increase production as much as 40%, with the same men and tools. AIR-PLUS sizes: 75 - 125 - 185 - 250 - 365 - 600 cfm at 100 lbs. pressure.

"Sure Prime" Pumps

To cut your water-handling costs Jaeger now offers pumps with characteristics exactly suited to each type of work — 1½" to 10" dewatering pumps up to 240,000 gph to move big volumes economically, higher head models up to 8" for transfer and supply pumping, high pressure pumps for jetting and other work requiring pressures up to 275 lbs.



"Speedline" Mixers

Today's models are the finest concrete mixers Jaeger has ever built — improved mixing action, faster discharge, lifetime transmission and drum tracks. Skip Shaker power loader 65, 115, 165; 3½S tilter and non-tilts, plaster-mortar mixers, bituminous cold-patch mixers.

2-Speed Hoists — Builders' Towers

Hoists up to 100 hp with 2-speed automotive transmissions for flexibility and easy interchangeability of gas, electric or diesel power. Portable self-raising towers with concrete bucket or platform cage interchangeable; 1-ton capacity, heights to 67 ft.

JAEGER
engineered equipment

1
CARRIES HEAVIER LOADS FASTER AND MORE PROFITABLY ON LARGER TIRES
2
DETACHES QUICKLY FOR FAST, EASY FRONT LOADING
3
STOOPS TO CLEAR LOW OVERHEAD OBSTRUCTIONS
4
RAISES ITS DECK TO CLEAR HIGH BANKED CROSSINGS

POWERED BY CUSTOMERS TRACTOR MOUNTED WINCH

Enjoy New Phase

TRAILER PERFORMANCE

with this 4-FEATURE

POWER-LIFT

DETACHABLE GOOSENECK

(Patent Pending)

GET NEW ILLUSTRATED BULLETIN!

A trailer equipped with this new type gooseneck will handle *more* of the difficult loads, *easier*, *faster* and more profitably.

Due to unusual versatility it will haul a wide variety of loads and make unnecessary the investment in varied equipment that would otherwise be necessary.

The larger tires are adequate for heavier than usual loads but the lighter hauls are profitable, too, because of the Rogers "easy roll" oscillating rear end units.

This most unusual gooseneck with its many advantages available on most Rogers Trailers and adaptable to many trailers of other makes.

EXPORT OFFICE: 50 Church St., New York 7, N. Y.
CABLE ADDRESS: "Broscites"

ROGERS TRAILERS

ROGERS BROTHERS CORPORATION
135 Orchard St.
ALBION, PA.

EXPERIENCE *builds 'em* PERFORMANCE *sells 'em*

Since 1915

(Continued from page 10)

destroyed last year by hurricane and fire. The Highway Commission may issue bonds either for a $6,250,000 four-lane concrete structure or a two-lane $4,250,000 bridge.

More Highway Problems—Indiana's Highway Commission anticipates a slowdown on its 1950 program unless it can replace 15 engineers who have resigned since Jan. 1. Chairman Samuel C. Hadden said many of the men felt they didn't have enough job security.

Courts are for That—Chelsea, Mass., has been advised by its planning board to tax that portion of the new Mystic River bridge which extends into the city, across the river from Boston. The board suggested a $10,000,000 assessment and an annual tax of $600,000, contending that the bridge has imperiled the city's finances and that it is owned "by private investors for a profit." The Massachusetts enabling act established the bridge authority as tax and assessment-exempt.

Code News—Southern Building Code Congress has adopted a reduction in the live-load requirements for floors in one-story buildings from 40 to 30 lb. The change increases flexibility of the code and tends to reduce floor costs in low-cost housing.

New Jersey Limits Loads—New Jersey Highway Department has concluded that vehicle weights on its state highway system should be limited to 20,000 lb on single and 28,000 lb on tandem axles. The 20,000 lb limit is in line with those of Delaware and Pennsylvania and 2,400 lb below that of New York. It's 2,000 lb above the AASHO recommendation.

THE COVER

A pleasing and impressive addition to the skyline of Lansing, Mich., is the Ottawa Street power station of the city's Board of Water and Electric Light Commissioners.

Now nearing final completion (after a number of expansions) with installation of a third and final generating unit, the station is striking because its design has eliminated the usual tall smokestacks. Specially designed stub stacks are of Venturi type, with induced draft fans built into the base, permitting shorter stacks that could be hidden in the parapet of the structure.

Stack design was worked out by Pratt-Daniel Corp. of East Port Chester, Conn., with Burns and Roe, Inc., engineers and construction supervisors for the project.

Four Good Reasons Why I'm Banking on Blue Brutes

LARRY DEMAYO
Philadelphia
Contractor

Larry DeMayo, an up-and-coming construction man, is getting his full share of important contracts in and around Philadelphia. He's also a steady customer for Blue Brutes. You'll know why when you read the captions with these action-photos, taken on his drainage sewer job near Large and Rhawn Streets. And remember: these are not *our* claims . . . *these are Mr. DeMayo's own words.*

1. *"The boys all want to run the Worthington spade. It turns out a lot of work without tiring them out."*

2. *"That pump (7M) really throws out the water. I'm going to get another one just like it. It's the best pump I've ever seen."*

3. *"The WB-81 is a great gun. It gives us no trouble at all. It hits hard but doesn't wear out the operator."*

4. *"This Worthington 105' compressor is the best there is. I won't have anything else on my jobs. I use Blue Brutes exclusively."*

As far as we're concerned, that's the Blue Brute story. After all, job-testing is the only sure way to find out just how construction equipment will perform. And when a man who's using that equipment speaks up . . . it's time to listen!

We'd just like to add that Larry DeMayo has plenty of company. All over the country Blue Brute users will tell you that for time-and-money-saving performance, quality materials and workmanship *there's more worth in Worthington* . . . Immediate deliveries from your nearby Worthington-Ransome Distributor. See him for further facts, or write us direct.

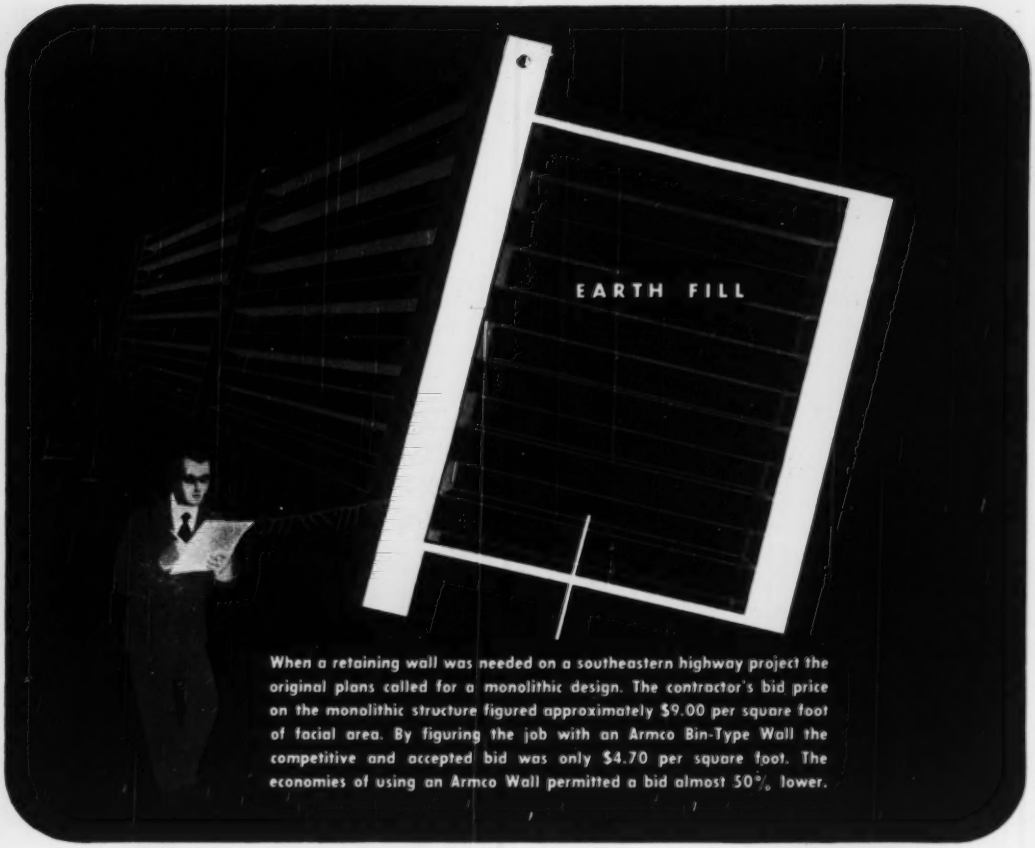
Worthington Pump and Machinery Corp.
Construction Equipment Department
Harrison, New Jersey
Distributors in All Principal Cities

WORTHINGTON

BUY BLUE BRUTES

WB-1

IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB



When a retaining wall was needed on a southeastern highway project the original plans called for a monolithic design. The contractor's bid price on the monolithic structure figured approximately $9.00 per square foot of facial area. By figuring the job with an Armco Bin-Type Wall the competitive and accepted bid was only $4.70 per square foot. The economies of using an Armco Wall permitted a bid almost 50% lower.

Contractor Cuts 50% on Retaining Wall Bid

When construction projects call for a retaining wall experienced contractors know a ready answer. They can bid lower and make a good profit with an Armco Bin-Type Wall.

Savings start immediately. Less material needs to be transported to the job site and the lightweight metal sections are economical to handle and haul.

Armco Walls are so easy to erect that unskilled labor can do it in any season. Little excavation is the rule. Usually you only excavate for the outline of the bins. Earth in the center doesn't have to be disturbed. Backfilling is done as the job progresses and the hazard of undermining adjacent ground during construction is arrested. There are no forms to build, no delay for curing. The work moves fast and labor costs are low.

Keep profit up and bids low by figuring that next job with an Armco Retaining Wall. You'll also find other Armco products economical to handle and install. These include MULTI-PLATE for large drainage structures and corrugated metal pipe for drainage and subdrainage work. Write for data on your specific needs. Armco Drainage & Metal Products, Inc., 4160 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation.

Export: The Armco International Corporation

ARMCO RETAINING WALLS ARMCO

THE CONSTRUCTION WEEK

DIVIDE AND MAYBE CONQUER—Rep. John Murdock, of Arizona, second ranking member of the House Public Lands Committee, is credited with a sharp political maneuver to weaken opposition to the Central Arizona Project Bill (ENR March 2, p 25). Murdock arranged to postpone hearings on S. 75 in order to permit the committee to first take up a pair of bills that would transfer development of California's Kings River to the Federal government. That put California congressmen—who want the Kings River transfer but don't like Central Arizona—in a neat box: If they vote for the Kings River transfer they help a project not unlike Central Arizona; if they vote against, they run counter to the wishes of their own voters. One escape seems possible, and it's not foolproof: Urge that the committee delay action until after the President gets the report of his water resources policy commission, about Dec. 1.

PAYOFF?—North Carolina professional engineers were flooding the governor's office last week with protests over the appointment of a non-registered engineer—paradoxically enough—to the State Board of Registration for Engineers and Land Surveyors. The appointee is H. D. Jones, who was in the road materials business for about 20 years, is now safety engineer for the state Public Works Commission—and who was very active in Gov. Kerr Scott's recent election campaign. Engineers pointed out: (1) A man who is himself not legally registered as an engineer by the state has no business sitting in judgment of the ability of others for legal registration; (2) state law provides that any member of the board must have had at least 10 years of practice—and Jones may not qualify.

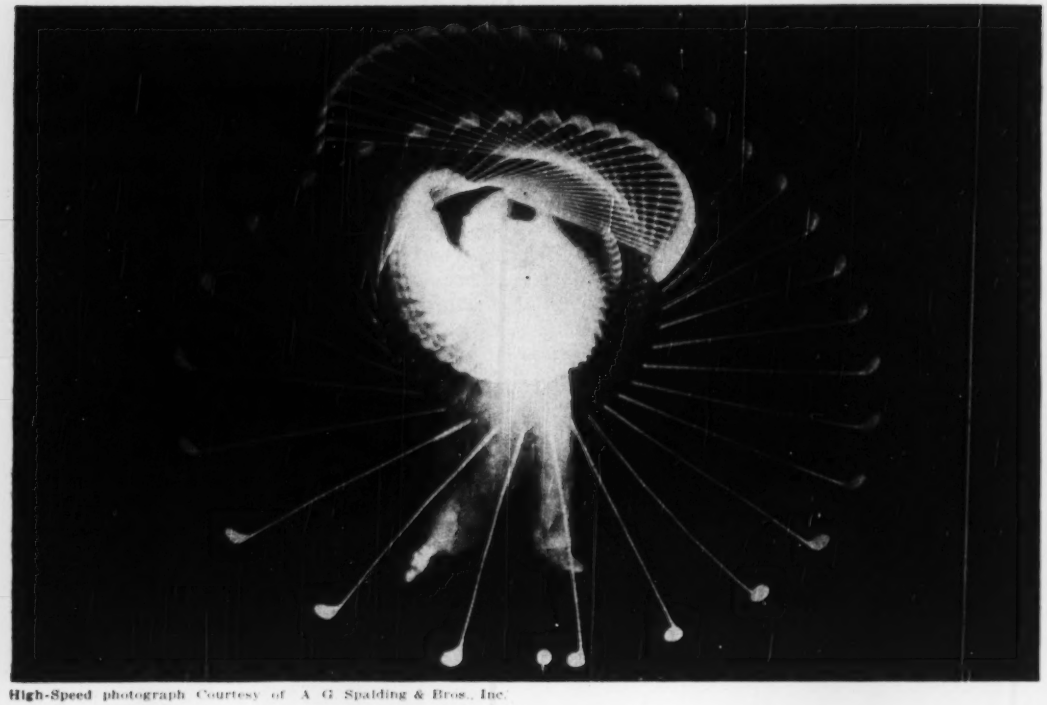
MORE WORKERS—Holding out some promise of further easing in the supply of skilled workers, the Veterans Administration now figures that 12 percent of all G. I. job trainees have asked for training in construction in the past two years. Construction students more than tripled from 1947 to 1949, said VA, going from 10,130 to 31,300. Bricklaying is the trade that increased most—more than 12,500 learned the trade in 1949, compared to 2,700 in 1947.

MORE WORK—And in case anybody was worrying about the future of the construction industry, Jess Larson, General Services Administrator, has cheering words. The U. S., said Larson, needs $100 billion more public works, to catch up with the desires of its population and the need for better transport, sanitation and services. Meanwhile, to keep today's construction rolling, Larson has established a three-man board of contract appeals in GSA. It will review appeals by contractors from decisions of contracting officers under contracts entered into by qualified GSA officials; or by contractors who have dealings with GSA and want relief from or change in decisions by authorized GSA officials dealing with contracts. The board's jurisdiction will cover both construction and procurement. Members of the board will be appointed as appeals arise. No one will serve on a case in which he has been connected with the contract under review. When Public Buildings Service contracts are under review, no PBS people will be appointed. All members of the various boards will be GSA people.

BALANCE OF POWER SHIFTS ON NLRB—An early indicator of the effect upon the National Labor Relations Board of the appointment of Paul L. Styles to replace J. Copeland Gray came recently. NLRB held that even after it has ruled against a union on a jurisdictional question, it still must be proved that the union violated the law by engaging in an illegal strike. Styles, former NLRB official in Atlanta voted with the majority. His predecessor, Gray, almost certainly would have voted against the ruling—with Chairman Herzog and Commissioner Reynolds. The new contingent of Styles and Commissioners Murdock and Houston generally will be able to control NLRB on close votes, whereas in the past, Chairman Herzog often swung between the Gray-Reynolds and Murdock-Houston contingents, thus usually cast the deciding vote on close issues.

STILL MORE MONEY FOR HOUSING—Another big dose of government credit is on the way to maintain steam behind the housing boom. Almost $3 billion will be made available by May in the Sparkman-Spence bill, now nearing final action. Under it, homes selling at prices up to $7,000 will get the most liberal terms—requiring only a 5 percent cash down payment when FHA-insured mortgages are used. There's direct lending to GI's who can't get private financing, but it'll start on a limited scale, probably to be expanded next year. Big rental projects also will get liberal mortgage insurance, even though it'll be less liberal than under Section 608. And government mortgage buying through the Federal National Mortgage Association will be revived. Next year, there'll be another push for the co-op housing scheme which was beaten this year. It'll win, too, observers think, if housing is slowing down then.

There's a **PATTERN OF PERFECTION** *in Chlorination too*



High-Speed photograph Courtesy of A. G. Spalding & Bros., Inc.

The champion's swing is a pattern of perfection, born of experience, practice and skill. The pattern of perfection in chlorination—proven ability to effectively solve chlorination's multitudinous problems—stems from the same background. W&T brings such a background to your job.

Whether you need chlorination for a drinking water supply, sewage treatment, a swimming pool or for industrial process and cooling water, you'll find that when you demand W&T equipment, you'll have all the ingredients for perfection—

EXPERIENCE gained through 35 years of research, development and pioneering—

PRACTICE based on making thousands of installations to meet a host of different problems—

SKILL inherent in a precision conscious factory and an able, alert field staff.

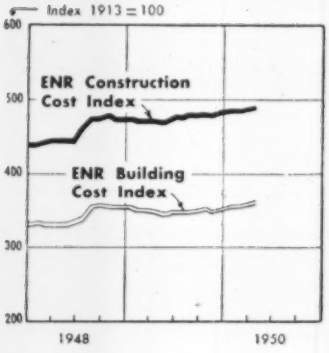
Call for the PATTERN OF PERFECTION on your next chlorination job—it's as close as your W&T Representative.

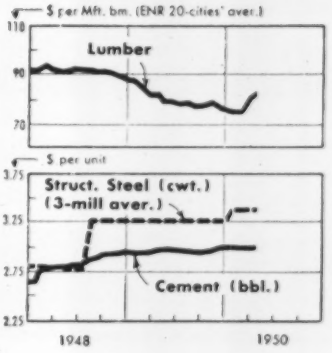
W&T Residual Chlorine Recorders provide permanent records of actual performance

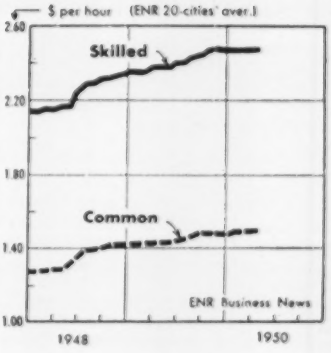
WALLACE & TIERNAN
COMPANY, INC.
CHLORINE AND CHEMICAL CONTROL EQUIPMENT
NEWARK 1, NEW JERSEY • REPRESENTED IN PRINCIPAL CITIES

S-48

APRIL CONSTRUCTION BUSINESS REPORT







ENR INDEXES (1913 = 100)	Apr. '50	Mar. '50	% Change	Apr. '49	% Change
Construction Cost	491.94	488.35	+0.7	473.54	+3.9
Building Cost	362.78	359.98	+0.8	351.35	+3.2
MATERIAL PRICES (20-cities' average)					
Cement, bulk, per bbl	2.961	2.956	+0.2	2.980	−0.6
Structural Steel, (3-mill aver.), per cwt.	3.400	3.400	0.0	3.250	+4.6
Sand, per ton	1.973	1.973	0.0	2.005	−1.6
Lumber, 2x4 Fir, per M ft. bm.	89.162	87.103	+2.4	89.740	−0.6
Lumber 2x4 Pine, M ft. bm.	79.033	77.483	+2.0	77.250	+2.3
Common brick, per M	27.987	27.987	0.0	27.769	+0.8
Ready-mixed concrete, per c. y.	10.313	10.313	0.0	10.244	+0.7
Structural Clay Tile, 3x12x12 Per M	132.900	132.900	0.0	131.095	+1.4
WAGE RATES (20-cities' average)					
Common	1.493	1.486	+0.5	1.428	+4.5
Skilled (aver. 3 trades)	2.478	2.469	+0.4	2.378	+4.2
Bricklayers	2.739	2.733	+0.2	2.602	+5.3
Structural Ironworkers	2.447	2.436	+0.4	2.351	+4.1
Carpenters	2.247	2.239	+0.3	2.186	+2.8

	March		%	Three Months		%
CONTRACTS AWARDED (thous.)	1950	1949	Change	1950	1949	Change
Total U. S. (ENR reported)	$993,453	$743,529	+33.6	$2,595,149	$1,872,439	+38.6
Private	623,415	344,058	+81.2	1,463,500	947,776	+54.4
Public	370,038	399,471	− 7.3	1,131,649	924,663	+22.4
Federal	75,860	163,317	−53.5	415,167	312,989	+32.6
ENR Constr. Volume Index, '13 = 100	351	269	+30.4	354	260	+36.1
NEW CONSTRUCTION CAPITAL						
Total	381,778	503,987	−24.2	1,107,202	1,268,406	−12.7
State & Municipal Bond Sales	274,442	289,855	− 5.3	664,450	655,793	+ 1.3
Corporate Security Sales	107,336	214,132	−49.9	442,752	612,613	−27.7
Federal (non-federal work)	.....	.....	.....	.....	.....	.....
Federal (federal work)	.....	.....	.....	.....	.....	.....

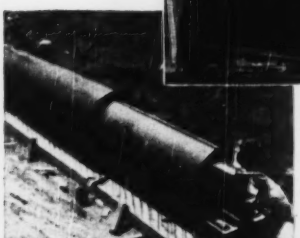
MATERIAL SHIPMENTS & LABOR SUPPLY	February (F) January (J) 1950	1949	% Change	Two Months 1950	1949	% Change
Cement, thous. bbls., Bu. of Mines	9,593(J)	8,756(J)	+ 9.5	.....	.....	.....
Fabr. Struc. Steel, thous. tons, AISC	110(F)	140(F)	−21.4	223(2)	239(2)	−6.6
Lumber, mil. ft. bm., NLMA	2,633(J)	2,195(J)	+19.9	.....	.....	.....
Lumber Prod., mil. ft. bm., NLMA	2,387(J)	2,232(J)	+ 6.9	.....	.....	.....
Contract Const. Employ., thous. BLS	1,829(F)	1,926(F)	− 5.0	Aver. 1,872(2)	Aver. 1,971(2)	−5.0

BLAW-KNOX steel forms

save one costly concreting operation on a BIG TUNNEL JOB

Original specifications on this big tunnel concreting job called for four operations . . . pouring side walls, placing arched roof, then the ceiling slab, and the floor. Collaborating with the contractor, Blaw-Knox engineers demonstrated how Blaw-Knox collapsible Steel Forms could be combined to permit concreting of side walls and roof arch in one operation. One step in construction was saved, and the necessity of using an expensive copper water stop between the wall and the arched roof was eliminated. The time saved expedited completion of the job. A daily concreting progress of 50 ft. was obtained by telescoping 50 ft. units of combined side wall and arch forms. Such Blaw-Knox consultation service in planning profit-making construction jobs as early as the blueprint stage is available to any contractor without obligation.

Right—Typical of the wide variety of jobs on which Blaw-Knox Steel Forms are used, this super highway viaduct was built with three sets of Blaw-Knox steel centering which carry the forms for the arch ribs.



Left—Blaw-Knox Steel Forms speed construction of a small sewer. Some of the recent typical jobs where Blaw-Knox forms and engineering service were used include: Brooklyn-Battery Tunnel, West Rock Tunnel (New Haven), Bull Shoals Dam, Delaware Memorial Bridge, Squirrel Hill Tunnel, Parkersburg Floodwall and many others.

TOUGH, UNUSUAL PROBLEMS SOLVED BY BLAW-KNOX ENGINEERING EXPERIENCE

As the original and most prominent manufacturer of Steel Forms for heavy construction, Blaw-Knox has been called upon to solve many tough and unusual concreting problems. The experience gained over 40 years has resulted in an engineering service unequalled for helping you obtain the most efficient forms for your particular job plus simplified forming methods that save time and money. Whatever your concreting problems, from tunnels to building big dams or bridges, to pouring small sewers or foundations, Blaw-Knox engineering skill and experience is at your service. Write today for advice or information, or ask for Bulletin 2035.

BLAW-KNOX

BLAW-KNOX DIVISION OF BLAW-KNOX CO., Farmers Bank Bldg., Pittsburgh 22, Pa.

New York • Chicago • Philadelphia • Birmingham • Washington

Do Trucks Pay Their Way?

ANNOUNCEMENT that the eastern railroads are considering a 25% reduction in steel freight rates points up the serious nature of the competition they are facing from the motor truck. It also focuses attention on the old question of whether the truckers are paying their just share for the use of the public highways. Long-distance trucking companies, adding up the license fees that they must pay in each state in which they operate, make a pretty good case for themselves. At least the sum is sizeable. What is not so apparent is that the money is not always equitably distributed among the various states. This was emphasized in a study by Griffenhagen and Associates, public administration consultants, of the situation in New York State where truck license fees are as little as 5% of what they are in some other states. The study also brought out that on a ton-mile basis passengers cars pay five times as much in combined license fees and gasoline taxes as do trucks. These facts and developments do not necessarily prove that trucks are not paying their way, but they do indicate that proponents of truck transport are and should be on the defensive to prove that they are not being unduly subsidized by the public. At a time when every possible means is being sought to finance badly needed road maintenance and construction there is good reason to look into this truck problem again.

Foreign Affairs—Engineering

THE MEETING IN MEXICO CITY of the Inter-American Association of Sanitary Engineering (ENR Mar. 30, 1950 p 23) had a significance beyond that of a technical conference. It could be summed up noting that for the second time in as many years, a group of professional men demonstrated that they and their governments are developing an effective means to promote mutual understanding on a question of international importance.

In more detail, the significance first rests in the subject itself—improvement of public health through engineered preventive measures. Basic to a nation's progress is the health of its people. The president of Mexico succinctly expressed this philosophy in these words: "The fundamental duty of a government that strives for the development and progress of its nation is to prevent, rather than try to cure, the endemic diseases of its people." In this fashion a high authority recognized and paid tribute to the efforts of the sanitary engineering profession.

Of further significance, the Mexico City meeting exemplified how the Point 4 program of our foreign policy—distribution of technical know-how—could work out. The Inter-American Association of Sanitary Engineering traces its origin to a cooperative program established in 1942 by the U. S. Institute of Inter-American Affairs, a creature of the U. S. Department of State. This modestly-financed government agency, among other things, sent teams of sanitary engineers to various countries in Latin America to share knowledge in construction of demonstration projects. The comaraderie that developed among these men throughout and after the war period gave impetus to the idea that much could be gained by creating a voluntary association to continue and strengthen opportunities for exchange of information. Thus it was that the organization, which now numbers some 1,400 and has attracted participation of countries outside the Western Hemisphere, came into existence.

Finally, there is no little significance attached to the fact that this international body was conceived and has become a dynamic force through the efforts of engineers. Too frequently the charge is made that engineers are delinquent in their obligations to social and political responsibilities. It may also be noted that in this particular activity the much maligned State Department can confound its critics. In "foreign affairs—engineering" it has done a good job.

Coordinated Planning Needed

DELAYS IN TRAVELING DETOURS are necessary adjuncts to many construction jobs. The improvement is—or at least should be—well worth a temporary inconvenience. However, in a recent San Francisco case—that of the Island Creek bridge—construction work on a major freeway just a few blocks from the bridge compounded the traffic congestion. The two projects throttled access from the south to the city's industrial and commercial area. Rush-hour traffic delays of half an hour were routine. Had a four-alarm fire or other catastrophic accident occurred in the southeast part of the city, fire fighting and rescue agencies would have been severly hampered.

Much of the congestion could have been reduced had construction of the projects been scheduled for a minimum of time overlap. But the bridge was built by the city; the freeway is under state jurisdiction. There was no apparent coordination.

Instances have been cited many times of newly repaved streets being ripped up for utility services. In all such work where public convenience and safety are involved, coordination of works is important. Information concerning design and construction progress should be relayed to any public or private agency that could possibly be involved. These agencies must get together to retain public confidence and safeguard public safety.

A fleet of Reo Gold Comet-powered trucks and tractors operated by the Emge Packing Company, Inc., Fort Branch, Ind.

"NEW MODELS WITH GOLD COMET ENGINES ARE THE BEST WE HAVE EVER USED"

—Walter Emge
Emge Packing Company, Inc.

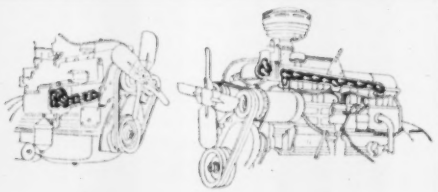
For meat packers like the Emge Packing Company, Inc., and for all truckers in the medium- and heavy-duty fields, Reo Gold Comet jobs are writing new chapters in truck history.

For instance, Walter Emge reports that his new Reo trucks and tractors are logging 1,000 miles a week and up, with an average gasoline consumption of eight miles per gallon. That's with payloads of twelve tons with tractors, seven to eight on straight trucks. And he has this to say:

"The new models with Gold Comet engines are the best we have ever used. Our plan is to replace all equipment of the E-21 and E-22 capacities with new E models as fast as we can."

Yes, nothing on the road can match Reo Gold Comet performance—except another Reo! Get the facts from your nearest Reo dealer today.

REO MOTORS, INC., LANSING 20, MICH.



Reo Gold Comet Cooling System

The Reo system of getting water into the Gold Comet, and out again, is one of the secrets behind the engine's superb performance.

A barrel and a half of water per minute is delivered through a gallery along the side of the engine block, *entering the engine at mid-point.* It circulates evenly around all cylinders for the entire length of the engine.

Water is returned from the engine head through *three* outlets at the front, middle and rear. This exclusive Reo design differs sharply from other engines in which water enters at the front, follows a line of least resistance, and leaves at the front. This latter arrangement results in uneven cooling—cool at the front, hot at the rear.

ENGINEERING NEWS-RECORD

APRIL 6, 1950 VOL. 144 NO. 14

Hearings bring small change in federal-aid highway bill

New Whittington bill keeps $70 million for interstate system, makes matching ratio optional—Bond financing encouraged—Local road aid seen as issue in Senate

Three weeks of fast-action hearings by the House Public Works Committee brought Congress a new federal-aid highway bill which corresponds closely to the original prepared by Rep. Will M. Whittington, Mississippi Democrat and chairman of the committee (ENR March 9, p 17).

Like the earlier version, the new bill would authorize $570 million of federal aid yearly for fiscal 1952 and 1953. The interstate system would get $70,000,000 of this.

The new bill clears up several points that were doubtful in the original. It would let any state expend its share of the interstate system allocation on any matching ratio from the existing 50-50 to 75 federal, 25 state. Some wealthy states want to stretch the money over more miles of new construction by maintaining the 50-50 ratio. Others, with smaller revenues, need all possible federal help to complete improvements on the main national network within their boundaries.

• **Bond financing retained**—Even more important is the retention in the new bill of a device that would let states borrow money for faster completion of interstate system improvements and then pay off the principal of the bonded debt out of later federal-aid allocations earmarked for this system.

This would enable the states to build projected main-line expressways at much lower cost than is possible by creating toll road authorities. It won wide support during hearings as a means of eliminating need for toll highways. Highway officials of only three states—Pennsylvania, New Jersey, and Ohio, already up to their ears in toll highway projects or plans—opposed the proposition (ENR March 30, p 26).

Regular federal-aid money ($500 million yearly under this bill) would be apportioned to the states on the same basis as at present—under formulas prescribed by the Highway Act of 1944. Apportionment of the new $70-million authorization for the interstate system would be on the basis of population alone, except that no state would get less than 0.75 percent.

Funds from the $500 million a-year of regular federal aid are allotted by the new bill in the same way as by the earlier version.

• **Close to AASHO's wishes**—As reported, the bill conforms pretty closely to what's wanted by the American Association of State Highway Officials. That's true even though the authorization is $240 million below AASHO's recommendation. An early House vote is expected and the bill should pass pretty much as written.

Real trouble will break loose in the Senate. Chairman Dennis Chavez, of the Senate Public Works Committee, has been holding back his own bill until his committee gets the House version. Four weeks ago, he had drafted a bill that would authorize $860 million yearly, $100 million of it for a hotly controversial new purpose. That would be money to be spent by townships and counties on local rural roads.

Senators Kerr, of Oklahoma, Stennis, of Mississippi, and Young, of North Dakota, championed allocation of federal money to such roads last year. They introduced bills to authorize up to $150 million annually for this purpose.

The Senate Public Works Committee held hearings that led to a request for a recently completed study by the Bureau of Public Roads (ENR Feb. 23, p 23).

• **Enter the Farm Bloc**—A fight can be expected in the Senate—by Farm Bloc senators—to add farm-access roads to the burden of federal highway aid. Further, they will attempt to give

(Continued on page 24)

SOMETHING NEW IN BRIDGE APPROACHES—This unusual double-spiral ramp at the west end of the Sickles Avenue bridge over the Passaic River at Newark, N. J., was built by the State Highway Department as a temporary expedient to relieve congestion in cross-river traffic after the old swing bridge below the railroad bridge was disabled. Ultimately, the main west approach is to be carried over the highway along the river to a new street now being cut through parallel to the railroad viaduct. (McLaughlin Air Service Photo.)

(Continued from page 23)
control of such money to township road commissioners. That would strengthen local political machines.

Members of the House Public Works Committee could see no federal responsibility for farm-access roads. The committee even deleted from the original Whittington bill a provision to use federal money to help improve engineering and administrative personnel in county highway departments. Some such help had long been advocated by Public Roads Commissioner Thomas H. MacDonald.

Appearing as a witness for the Commerce Department—under which his bureau now operates—MacDonald testified in accord with the President's budget message, as is customary.

On this basis, his statement held to the $500 million yearly requested by the President. And MacDonald recommended no departure from the 50-50 matching ratio for the inter-state system. Instead, Commerce suggested that at least $150 million be earmarked for this system on a 50-50 basis.

• **Ratio increase opposed**—Both Commerce and the Budget Bureau opposed any change of the 50-50 matching formula. Their views coincided with BPR's conviction: (BPR deeply distrusts the consequences of any move that increases federal participation beyond one-half the cost.)

Only the extreme urgency of enabling the interstate system to protect national defense led the Bureau, last June, to suggest to Congress that it consider stepping up the ratio to perhaps 75-25 for the main national network.

Business groups generally opposed any upward change in federal-state matching ratios—for any purpose—and also any increase in annual aid beyond $450 million.

U. S. survey of 1950 sees business spending off 11%

American business will spend about 11 percent less on new plant and equipment in 1950 than in 1949, according to the latest survey of plans for capital expenditures made public by the Securities and Exchange Commission and Commerce Department.

Findings parallel closely results of McGraw-Hill's survey of business plans for new plants and equipment (ENR Jan. 26, p 9). Both show that expenditures in the manufacturing industries, railroads, other transportation, electric and gas utilities, and mining will run below 1949, although remaining high.

About 30% of these expenditures—which will total $16.1 billion in 1950 as compared to $18.1 billion in 1949—have gone for plant construction in the past. No change in that proportion is expected this year.

The SEC-Commerce survey shows expenditures in the first half of 1950 will run about 8% below 1949. In the second six months, though, the survey shows, capital programs will drop about 14% below the 1949 level.

In the first three months of 1950, however, spending for capital improvements ran higher than had been expected from earlier surveys. As plans stand now, expenditures will increase slightly in the second quarter. And—since actual spending has usually run larger than planned in the years since the war—the second half of the year may see more investment than plans indicate.

Here are the figures by industry groups:

	1949 Spent	1950 Planned
	(000,000)	
MFg.	$7,250	$6,740
Mining	740	650
Railroad	1,350	950
Other transp.	520	350
Elec. & Gas Util.	3,140	2,940
Comm'l. & Misc.	5,120	4,480
Total	$18,120	$16,090

Turnpike planning loan validated by Ohio court

It's perfectly legal for the Ohio Highway Department to lend $600,000 to the Ohio Turnpike Commission for an engineering survey of the proposed Ohio turnpike. But the turnpike act itself remains open to constitutional challenge, and one state Supreme Court justice believes that such challenge will be made.

That's the net effect of an Ohio Supreme Court decision in a suit brought by Highway Director T. J. Kauer to compel two state financial officers to free the funds they had been withholding.

The court sidestepped a ruling on constitutionality of the act as a whole in its 5-2 decision. Two dissenting justices condemned the act as completely unconstitutional. Justice K. A. Taft, for the majority, held that there's a specific appropriation for highway planning and betterment and that funds were available under it. But, in declining to rule on the act as a whole, he could not see that "any useful purpose will be served by considering in this opinion the other questions which I believe must be decided to sustain the judgment in this case. Some of these questions (as to constitutionality) will undoubtedly be presented for decision in subsequent litigation before this court."

Meanwhile, Governor Lausche opposes any expenditure until constitutionality of the act has been established. He may seek a declaratory judgment on its validity.

Ohio court invalidates city, county bonds

Cleveland, Cincinnati and others must re-submit proposals ok'd last fall if programs are to proceed

Unanimous decision of the Ohio Supreme Court March 29 halted issuance of about $14,000,000 worth of improvement bonds approved by more than 55 percent of Cleveland and Cuyahoga County voters last November.

The verdict: That a majority of 65 percent was necessary to pass the bond issues under the old Ohio law instead of the 55 percent majority vote requirement passed two years ago by the Ohio General Assembly.

• **Affects several issues**—The high court held that the 55 percent minimum requirement had not gone into effect when proceedings which authorized the vote were instituted, and the fact that the new law was in effect on election day made no difference. In addition to invalidating the Cleveland and Cuyahoga County bond issues which failed to obtain the 65 percent majority, the decision affected bond issues in Cincinnati, which brought the case, in Barberton and in Hamilton County.

The decision means that five Cleveland bond issues, totalling $12,500,000, which received more than 55 percent majority but less than 65 percent failed to carry and will be resubmitted to the voters next November. Those bond issues were: Shore protection, $1,000,000, which received 61 percent; street opening, $3,500,000, 62 percent; off-street parking, $1,000,000, 57 percent; airports, $5,500,000, 55 percent; public parks, $1,500,000, 58 percent.

• **Sewer issue safe**—Three county bond issues also depended on the decision: Lakeside Courthouse repairs and alterations, $1,369,000, 56 percent; soldiers relief building, $35,500, 59 percent; and sewage treatment and disposal works plans and specifications, $500,000, 64 percent. A $2 million bond issue for sewers in Cleveland received 66 percent, a majority, and became effective without difficulty.

The court's action was on a mandamus brought by Cincinnati, in which Cleveland joined. Cincinnati's city council had authorized submission of a $2,450,000 bond issue to the voters for parks and playground improvements.

The bond issue received more than 59 percent of the votes cast and the council proposed to issue a $50,000 installment on the bonds. But the city auditor refused to certify his estimate of the life of the permanent improvement to be acquired, leading to the litigation.

Colleges are enlisted in water-use survey

Water Resources Policy Commission issues detailed questionnaire on basic problems—Cooke optimistic

Knotty economic questions facing the President's Water Resources Policy Commission are to get a going-over from the staffs of nearly 150 universities, colleges and agricultural experiment stations.

Chairman Morris L. Cooke mailed to each of these last week a seven-page, single-spaced questionnaire listing 18 separate, detailed queries. Similar queries went to industry associations particularly concerned with water problems, and to a dozen economists who helped the commission draft its inquiry sheet.

Answers are requested by May 31. The commission expects to receive helpful replies from more than half of those queried. Problems posed in the questionnaire are, in the main, expanded versions of the same policy puzzles given the commission by President Truman in his letter of Jan. 3. That message asked for a final report not later than Dec. 1.

Inquiries to educational institutions were addressed to the heads of the schools, with a request that the socio-economic faculties be assembled to develop answers. All replies will be studied before the commission begins to prepare its own recommendations on the problems.

• **Basic policy stuff sought**—Questions asked by the commission dig deeply toward the roots of the water policy problem. They delve into water uses—domestic, irrigation and industrial; upstream vs. downstream interests; national vs. regional interests; assessment and payment for benefits; food surpluses, new land and long-range need for agricultural production; economic justification for multiple-purpose projects; reimbursable and non-reimbursable costs; use of surplus earnings—from power, for example—to pay subsidies; rate of interest and payoff period; hydroelectric power policy; inland waterways, freight tolls; changes in justification standards; fitting construction to the business cycle, and acreage limitations for federally aided irrigated farms.

The questionnaire was approved by the seven-man commission at its third Washington meeting, March 25-27. During that meeting, the group agreed on its schedule of meetings for the next eight months, up to the conclusion of its work. The next meeting, its fourth, will be April 30-May 1-2, followed by another May 28-30.

Chairman Cooke reported that commissioners felt much encouraged by excellent progress so far. He is now confident, he said, that the group will be able "to deliver the goods."

Economy, not pressure dictated job settlement

Economy, not union pressure, caused Los Angeles' Department of Water and Power to string transmission lines by contract on its 250-mi Owens Gorge project, according to S. B. Morris, chief engineer.

That decision, and another that the city will erect the towers itself, did end a half-day strike by 1,000 linemen (ENR March 9, p 19).

Mayor Bowron had said the issue "is between the business agent for the city workers' IBEW-AFL union and the head of the AFL Building and Construction Trades Council, who wants the work done privately."

Bids for tower erection were above the department's estimate. Those for stringing the conductor were lower. So the city chose to build the towers and awarded the conductor contract to Joe Bush Service Co., El Centro, the first time the city hasn't strung its own conductor.

Military construction

The House Armed Services committee last week approved a $689-million program to strengthen key defense points overseas and at home and to expand military research activity.

New state authority proposed in Mass.

A movement has been started in Boston to promote a new state authority which would finance, erect and manage public and semi-public revenue-producing projects. It would be patterned after the Port of New York Authority. The authority would issue its own tax-free bonds.

The authority would be set up to include supervision of the Mystic River Bridge, the Sumner Tunnel and the Port of Boston. Among the possible undertakings are the Boston Common garage, a new wholesale market district, and a truck terminal. It might also take in the Logan International Airport at East Boston.

Backers of the plan also suggest that the authority might build and operate toll express highways as a part of the 10-year, $700,000,000 "Master Plan" for highway improvement.

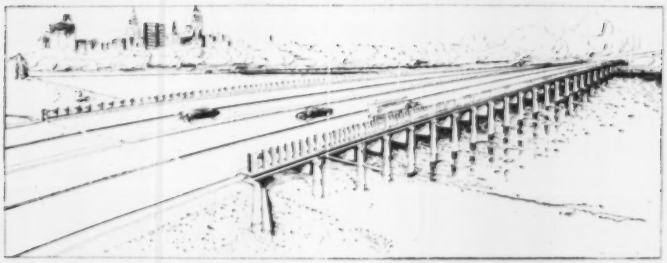
On the theory that all projects should be self-supporting and self-liquidating and paid for by those using them, no state funds would be used and no state credit extended to the authority.

Urge Boston airport plan

A 13-point plan to extend facilities and prevent erosion at East Boston Airport has been proposed by the interested state agency. It would total $2,500,000 in cost, and include rip-rap on the ocean side of the runways to halt erosion. Fire protection works also would be extended.

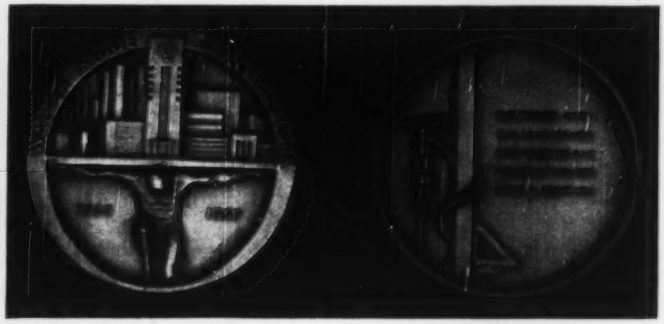
LAND CLEARING, NEW STYLE—Wixson & Crowe, Inc., and J. H. Trisdale, Redding, Calif., clearing contractors, have what they hope is a good idea for land clearing. These 4.5-ton, 8-ft steel balls, connected by chains as much as 30-ft long, will be dragged behind tractors to clear the Hungry Horse reservoir site in Montana. The balls will hold the chains 4 ft above the ground, snagging brush and small trees, but avoiding large stumps. (Reclamation Bureau Photo.)

The Construction Industry in Pictures

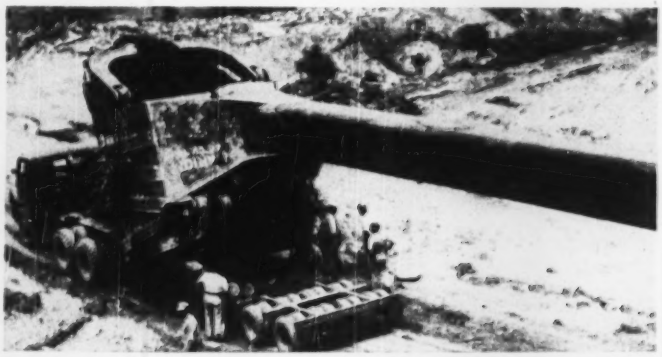


NEW BRIDGE FOR TULSA—Two 27-ft roadways and two 4-ft sidewalks, with a 4-ft separating strip, will be built into this new bridge across the Arkansas River in Tulsa, Okla. M. E. Gillioz, of Monett, Mo., was low bidder at $1,135,897 and was awarded the contract. The 2,411-ft bridge was designed by the state Highway Department's bridge division under direction of Homer X. White, department bridge engineer.

OCTOPUS LIFT FOR DOUBLE CURVES—This flexible mat attaches itself to a cylindrical or spherical surface, adheres with plent of lifting force. Made up of five steel-sheet vacuum "fingers," it is a modification of the vacuum mat for curing and lifting flat concrete elements. Karl P. Billner, president of Vacuum Concrete Co., Philadelphia, is the inventor.



CONTRACTOR DESIGNS HIS OWN MEDAL—To commemorate the 50th anniversary of its founding, Walter Kidde Constructors, Inc., celebrated with a dinner March 7 at which souvenir medals designed and executed by the staff were presented to the guests. Held at Stevens Institute of Technology in Hoboken, N. J., alma mater of the founder, who would have been 73 years old on that day, the dinner was attended by 170 persons. It was presided over by William Collins, company president. Principal speakers were Gov. Alfred Driscoll of New Jersey and Dr. Harvey Davis, president of Stevens.



BIG BUCKET TAKES A RIDE—Bulkiness was the problem in moving this 40-yd coal-stripping bucket and an 80-ft dipper stick. They weighed only 90 tons, but the assembly was 152 ft long. A special 16-wheel platform trailer moved the top-heavy 25-ft high by 18-ft wide bucket 15 mi over haul roads at the Hanna Coal Co. in Ohio. The trailer was decked with 90-lb rails and solid 3-in. steel plate. Trailer was pulled by a 10-wheel, 200-hp tractor, while a four-wheel pole-tractor carrying the rear end of stick was guided by second truck. Move was made by Crane & Truck Service, Inc., Pittsburgh, under the supervision of J. C. Moran. (Roger Brothers Corp. Photo.)

New design developed for Ice Harbor fishway

Improved performance seen at lower Snake River dam if proposal works—Dam controls major spawning ground

Columbia River salmon should have an easier time getting past Ice Harbor Dam, on the lower Snake River in eastern Washington, than they'll have passing McNary Dam.

Army Engineers, in charge of construction at each, have developed a tentative design for the Ice Harbor fishways. It'll involve operating two turbines at a reduced head and discharging their water into a special passage 7 ft above tailwater level. The water than will ease into the fishways.

• **Two advantages**—Col. William Whipple, Walla Walla, Wash., district engineer, says the Ice Harbor plan, if it can be put into practice satisfactorily, will have two advantages over the McNary system for fish passage. At McNary, water for attracting salmon to the fishways will be drawn by gravity from the upper pool or pumped from the lower pool. Neither will be entirely satisfactory, since it'll cut the capacity of McNary's power plant by 20,000 kw and the pressure jets will create a turbulence injurious to fingerlings. The Ice Harbor plans have been sent to the U. S. Fish and Wildlife Commission and the Washington Fish and Game Commission for comment. Fishing interests continue to fight Ice Harbor because of the Snake's importance to fishing.

Meanwhile, the Corps of Engineers is pushing its Columbia River development and will ask bids on first-stage construction of Chief Joseph Dam, on the Columbia mainstem, to be opened May 2 at Seattle. One more stage will be required for completion of the $234 million project, which is to begin generation in 1956. First stage involves 1,250,000 cu yd of excavation for the north bank abutment, construction of a 2,000-ft cellular sheetpile cofferdam enclosing the north half of the dam and stilling basin foundation area and construction of 2,000 l f of rolled impervious upstream blanket.

Experiment on streets

Charlotte, N. C., is experimenting with a new type of stabilization for dirt streets. City Engineer Lloyd G. Richey says it's designed to make street-oiling a "once-a-year," rather than a "once-a-month" job.

Instead of using scrapers and oilers in a quick dust-settling job, existing street surfaces are pulverized, with dirt added where necessary for a four-in. roadbed. Oil and tar is mixed with loose topsoil and the mixture packed.

G. B. Walbridge honored by Michigan architects

George B. Walbridge, engineer, builder, construction leader extraordinary, was fittingly honored for a half century of service to the building industry by 1,500 of its representatives at the recent annual convention of the Michigan Society of Architects. He is chairman of the board of Walbridge-Aldinger Co., of Detroit; graduate of both Lafayette and Cornell; engineer officer in the Spanish-American War and World War I; one time employee of Daniel A. Burnham, great Chicago architect; one-time vice-president of George A. Fuller Co.; president of the Associated General Contractors in 1925 and still a director. His record is one of "a tried and true friend of the construction business" in the words of Alden B. Dow, president of the Michigan Society of Architects, who is shown above presenting Mr. Walbridge with a testimonial to his leadership and accomplishments.

Proctor heads C.I.A.C.

Carlton S. Proctor, New York consulting engineer, has been elected chairman of the Construction Industry Advisory Council for 1950-51, U. S. Chamber of Commerce announced.

The Construction Industry Advisory Council is made up of more than a hundred national trade and professional organizations having a major interest in construction. It meets annually at invitation of the national chamber to consider broad problems of concern to the entire industry such as research, apprentice training, building codes, and stabilization of building.

Proctor, a member of the firm of Moran, Proctor, Freeman & Mueser, has served as vice president and director of the American Society of Civil Engineers. He has collaborated—and supervised—the design of many buildings, dams, bridges, and other works in this hemisphere and in Russia.

USDC publishes report on highway capacity

Highway Research Board committee, Bureau of Public Roads collaborated on survey of rural and urban roads

The Commerce Department has published a detailed study of the effect of roadway and traffic conditions on the flow of vehicles, both on rural and on urban highways. A cooperative project of the Highway Research Board's committee on highway capacity and the Bureau of Public Roads, the report gives the results of surveys and research by the board, BPR, and many local engineers.

O. K. Normann and W. P. Walker, of BPR's highway transport branch, prepared the report. Normann and Walker are chairman and secretary of the highway capacity committee.

In addition to data on capacities of rural two-lane and multilane highways, presented in previous publications, the report includes factual information on the flow of traffic at intersections at grade, weaving sections, grade separations and ramps; the effects of parking on city streets; and the relation of hourly to annual average traffic volumes. This information, particularly for urban highway facilities, has never before been available in such form.

As the authors point out, knowledge of highway capacity is essential in the sound economic and functional design of new highways and in the adaptation of existing roads and streets to present or future traffic volumes. Their report discusses at length the elements of highway design, vehicle and driver performance, and traffic control which tend to reduce highway capacities. It indicates corrective measures.

Printed in booklet form as the "Highway Capacity Manual," the report comprises series of articles that appeared in PUBLIC ROADS. Copies may be obtained from the Superintendent of Documents, Washington, D. C., for 65 cents.

In recognition of his services in compiling the report, Normann received the Highway Research Board's distinguished service award for 1949.

Plan Maryland road test

Inter-regional Council on Highway Transportation has authorized a test of 1.1 mi of reinforced concrete highway in Maryland to evaluate effects of truck traffic. It also recommended tests of flexible pavements.

T. J. Kauer, Ohio highway director and head of the Inter-regional group, said the Maryland test "may not be conclusive in its results," but added that the feeling is it will contribute needed information.

Airport construction spending rose substantially last year

Outlook for 1950 is for a continuation of heavy spending by CAA and local project sponsors—$88 million sought in federal budget

Construction expenditures on U. S. airports rose markedly during 1949. Figures point to a construction outlay exceeding $100 million for the year.

CAA expenditures are a good yardstick. In 1949, CAA paid out $46,300,000 for work accomplished on airports—more than twice the $21,900,000 expended the previous year. Matching fund expenditures by the local project sponsors ran ahead of the CAA payments. Other federal money, in smaller amounts, went into airport work in Alaska and at military bases.

The high rate of construction expenditures will continue. By June 30, CAA will have used up nearly all the $85,000,000 in cash so far appropriated for airport aid. In addition, it will have obligated most of the $62,000,000 contract authority.

• **Expect to hold pace**—For fiscal 1951, starting July 1, President Truman in his budget message asked Congress to grant CAA $51,300,000 cash to take care of federal-aid airport commitments and $36,700,000 of additional authority to enter into contracts with local sponsors for airfield construction. These sums, if granted, will keep the airport program going at the quickened pace of the last thirteen months. Of the $36,700,000 added contract authority, $25,000,000 would go to 86 large airports.

To show how the federal-aid airport program is moving, CAA during 1949 made grant offers totaling $34,300,000 for 460 screened and approved projects. In the same twelve months, it entered into contracts with local sponsors for 470 airport construction jobs that would get $37,900,000 of federal aid. Nearly 200 offers were for Class 4 and larger airports.

More and more, the big money is going to the larger airports. To date, CAA has allocated $134 million for airport projects (of which $97,000,000 has advanced to the grant offer stage). Class 4 and larger airports get 70 percent of this money. Based on the allocations so far made, the total program to Dec. 31 for airport construction, including the sponsors' contributions, tops $275 million.

• **Won't realize potential**—For the federal-aid airport program, now in its fourth year, Congress has authorized appropriation of up to $520 million over a seven-year period ending with fiscal 1953. With local matching funds, the full program—if Congress carried it out to the limit of authorized appropriations—could develop more than $1 billion of airport construction. But so far, Congress has furnished a total in four years of only $157 million.

• **Red tape cut**—Mechanics of the airport program got an overhauling in 1949, when CAA further simplified its red tape to cut down paperwork and make life somewhat easier for project sponsors. More important, the agency dropped some of the requirements that had hampered the starting of projects and gave the sponsors a freer hand in negotiating their own contracts with gas and oil suppliers (ENR May 12, 1949, p 54).

For airports yet to come, CAA delivered its major dictum of the year Oct. 13 when it said it would no longer approve more than one runway for any airport unless traffic volume justified additional landing strips, and then only if the runways did not intersect. That ruling appears due to stand. Interestingly enough, it is not based on any expectancy that castered landing gear will be used for heavier planes.

Rather, CAA thinking behind the pronouncement is this: All commercial aircraft of larger size—that will never be equipped with cross-wind landing gear—are now able to land on a single, properly oriented strip at nearly all times practically anywhere in the country. More than 25 percent of the nation's 6,500 airports today are single-strip fields, CAA points out. So also is Berlin's Tempelhof that served "Operation Vittles," the airlift.

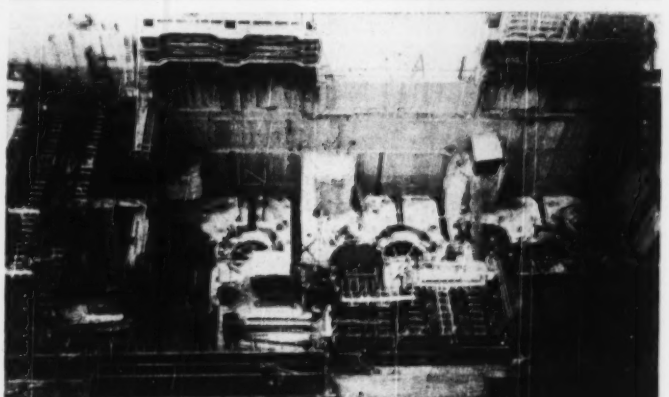
• **Regular strips for jets**—Again on the side of airport economy, CAA feels that commercial jet aircraft in the near future will be able to use runways of the same length as conventional aircraft. That expectation is borne out by the present operating plans for British and Canadian jet transports, CAA believes.

CAA at the end of the year, had 311 projects under construction, involving $39,500,000 of federal aid.

Legislatively, CAA hopes that Congress soon will extend the airport program beyond June 30, 1953. Cities have to look farther ahead than three years on airport construction. Larger fields, especially, have to be built in stages over an extended period. The agency also favors legislation to allow federal-aid for land acquisition in the same measure as for construction.

In its National Airport Plan for 1949, CAA indicated that 4,977 airports should be built or improved. Of these, 2,183 are existing airports, and 2,794 are new. They include 567 airports of Class 4 or larger. Total estimated cost would be $1.1 billion, of which the federal government would supply $500 million.

The 1950 edition of the National Airport Plan revised annually as required by law, will be ready in April. It will give a complete summary of both the plan and the airport construction program up to Dec. 31, 1949.



POWER PLANT PROGRESS—Center Hill Dam and power plant on the Caney Fork River, near Cookeville, Tenn., is progressing rapidly after a 4-year layoff due to shortages of manpower and materials during the war. Massman and Metcalfe Construction Companies and Gordon Hamilton Contracting Company, Inc., Kansas City, Missouri, speed work on power plant. (Corps of Engineers Photo.)

Army Engineers step up Alaska work, plan $105 million of construction

Schedule for 1950 more than doubles previous year's work; U. S. to supply many needs of contractors in new jobs

Planning their largest peacetime construction program for the territory, Army engineers of the North Pacific Division will let construction contracts totaling more than $105 million during 1950 for work in Alaska.

Col. O. E. Walsh, North Pacific Division engineer, said the 1950 program—consisting entirely of work for the military establishment—will be more than twice the $46,000,000 worth of awards made during 1949. He pointed out the new contracts will be awarded, for the second year, mostly on a competitive basis and that the U. S. government will supply many of the necessities to contractors.

Work to be done includes ten major contracts for the defense establishment at Fort Richardson, near Anchorage; nine at Eielson Air Force Base, near Fairbanks; and three at Whittier Army Post, at Anchorage. Projects are scheduled at various other defense posts as well. Barracks, officers' quarters, family dwelling units; water supply systems and pipelines; storage buildings and other facilities will be built.

• **Encouraging bidders**—As an encouragement to prospective bidders, the government has decided to take steps to eliminate several of the major capital costs which experience has shown are difficult to estimate, Army men said.

Thus, equipment is being made available (by rental) at the job site, and large quantities of material of the type most in demand are provided to successful bidders from government stocks. Facilities for feeding and housing workers are to be provided in camps at the principal job sites, on a fixed-price-per-man-day basis by the government.

The single most critical item—concrete—has been produced for the U. S. on separate contracts, and furnished to each of the construction contractors requiring it.

Also under the heading of encouragement, the government has conducted or directly supervised some of the work incidental to construction it is letting to contract.

• **Plenty of clients**—The Alaska District Engineer, Col. Lyle E. Seeman, has his office at Fort Richardson. Charged with responsibility for supervision of construction in the territory for the national military establishment, he has as clients the Air Force, Army and the Alaskan Communications System—operated by the Army's Signal Corps.

Under its program of competitive bidding, the district has completed 29 separate contracts involving major construction work for the Air Force; 11 contracts for the communications system, and 8 contracts for the Army.

These projects included: Barracks, power plants, utilities, street paving, sewer construction, warehouses, telephone exchanges, water treatment and sewage plants.

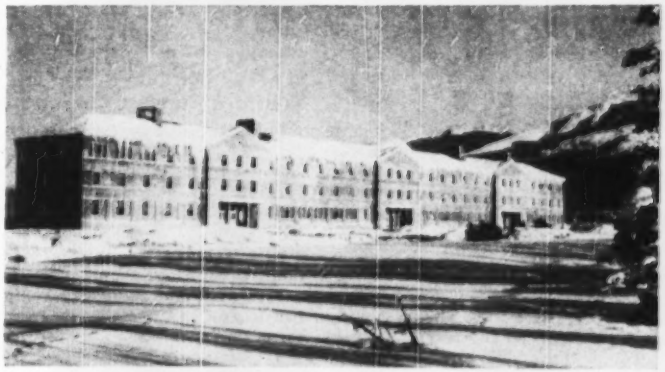
Appoint Savage to check Reber Plan possibilities

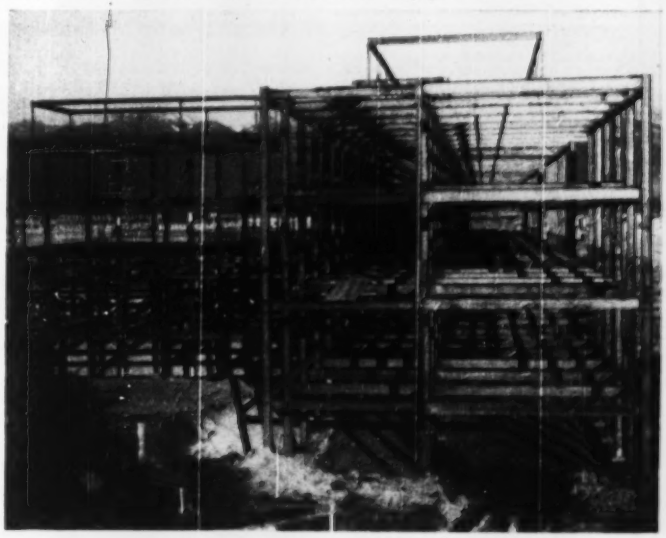
John L. Savage, engineering consultant, has been authorized by the California State Assembly Interim Committee on Tidelands and Transbay crossings, to advise the committee whether it should make a fuller study of the oft-proposed Reber Plan.

This controversial plan, devised by John Reber, would dam the two arms of San Francisco Bay, allowing ship passage through locks (ENR July 11, 1946, vol. p. 56).

The assembly committee will meet late this month to go over the plans and reach a decision on whether or not to make a more intensive study of the Reber proposal.

The committee could spend about $30,000 if it decides to carry its study further.





COLD WORK—Barracks for U. S. soldiers in Alaska must be built for just such weather conditions as exist in the top photo—a newly-completed 500-man barracks at Ft. Richardson, near Anchorage. At bottom is steel frame for a similar structure, also at Ft. Richardson. Contractor on the first job was Morrison-Knudsen Co.-Peter Kiewit Sons Co.; on the second, Patti-MacDonald Co. (U.S. Army photos.)

CONSTRUCTION BUSINESS

Volume hits another high in March

Contracts awarded totaling $993 million in March shatter previous records and bring the first quarter to more than $2½ billion, 39% higher than last year ENGINEERING NEWS-RECORD reports show.

• **Private building leads**—Private construction in March is 81% ahead of last year; public works are off 7%. Housing is the biggest sparkplug, but all private construction is zooming way ahead of last year. Mass housing at one-third of a billion dollars is double March volume a year ago.

Industrial building is up 20% from 1949. Commercial building is up 110%, and unclassified private construction, such as pipelines and transmission lines, is up 160%.

While public works contracts are off generally, street and road contracts are 117% above March, 1949.

• **First quarter**—The first quarter of 1950 stands out as a building boom of unprecedented intensity. At the present rate, heavy construction contracts for the year would total $10 billion, compared with last year's $8.2 billion and a forecast for 1950 of $8.6 billion.

So far, there's no sign of an early let up. Contracts the last two weeks of March averaged $218 million a week, 9% higher than the average week to date in 1950; new proposed work in March maintains the billion-dollar-a-month rate that got going in November, 1949.

Public works contracts are up 22%—private construction 55%.

• **Every area gains**—Every major region of the U. S. has put itself ahead of last year in heavy construction. All areas are up for the first three months, and all except the Far West gained during March (Far West was even with 1949 in March).

The South, which lagged behind the U. S. as a whole earlier this year, is up 97% over last year in March. It's now 33% ahead of 1949 for the first three months of 1950.

The Far West would be 3% over a year ago even without the atomic energy projects in Washington, which bring the total for the region up an extra $200 million to $534 million for the first quarter.

Western lumber up again

Lumber prices are still rising in western cities this month, but in most areas prices are unchanged since late February.

Douglas fir 2x4s are up $7½ a M in St. Louis and Seattle this month; yellow pine is mostly steady but has dropped $4.75 a M in St. Louis and increased $21 to $85.95 in Detroit, where pine had been relatively low-priced at $69 before.

On the West Coast, Douglas fir in Los Angeles took another jump, $3 a M, to $88; Seattle and San Francisco had not shown any change up until this month, but the Seattle price is now $70.

April costs up nearly 1%, ENR indexes show

Construction costs pushed almost 1% further into new high territory during March. The ENR Construction Cost index gained 0.7% to 491.94 (1913 = 100); the building cost index gained 0.8% to 362.78.

That puts April costs at a new high. Construction costs are 3.9% above a year ago, and building costs are up 3.2%.

The continuing rise in lumber accounts for most of the increase in costs. Wholesale lumber prices advanced an average of 2.3% for all the U. S. in March—are now 6.3% above January and 1% over a year ago.

Labor costs advanced this month, too. The U. S. average for common labor increased 0.5% to $1.493 an hour. Skilled rates are up 0.4% to an average of $2.478 an hour. Cleveland wage contracts in March raised pay in that area 12½ cents an hour. Baltimore wages are up 10-25 cents an hour effective April 1 on contracts signed so far; overall increases in that city promise to average 7% or more when all contracts are signed.

Structural steel orders top year ago level

New order bookings of fabricated structural steel for February amounted to 110,528 tons, according to American Institute of Steel Construction, Inc. That is 6% below January but 2% above February a year ago.

Shipments in February totaled 122,614 tons, off 8% from January.

The order backlog for the next four months stands at 565,428 tons.

ENGINEERING CONSTRUCTION CONTRACTS REPORTED TO ENGINEERING NEWS-RECORD — MARCH, 1950

ENGINEERING NEWS-RECORD reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation, $98,000; other public works $60,000; industrial buildings, $68,000; other buildings, $250,000

Five Weeks—Thousands of Dollars (000 Omitted)

	March, 1950						U. S. Cumulative			
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	Three Months 1950	Three Months 1949	% Change '49 '50	Canada Mar. 1950
Public Works											
Waterworks	1,270	3,975	1,301	1,655	1,527	4,470	16,248	66,474	34,847	+ 91	520
Sewerage	2,032	5,167	3,927	4,288	4,927	2,900	23,247	58,081	48,200	+ 20	140
Bridges	1,432	4,238	18,861	1,853	5,024	3,047	34,455	74,376	87,264	— 15	250
Earthwork and waterways	374	3,431	2,997	1,737	19,840	17,117	46,518	95,292	168,389	— 43	235
Streets and roads	5,266	33,996	24,313	7,260	28,721	9,566	109,522	232,267	127,171	+ 83	2,653
Public buildings, residential	5,680	3,481	955	682	188	11,367	40,149	84,772	— 53	1,587	
Other public buildings	4,779	20,983	12,503	14,205	18,541	25,854	96,865	469,102	316,945	+ 48	3,716
Unclassified	311	4,827	1,863	2,570	6,614	15,641	31,816	95,908	56,983	+ 68	3,148
Total public	21,153	79,170	66,660	36,253	87,631	79,169	370,038	1,131,649	924,663	+ 22	11,846
Federal government (included in above classifications)	549	3,346	5,863	4,879	22,091	39,132	75,860	415,167	312,989	+ 33	2,049
Private											
Bridges					75		75	1,463	674	+ 117	
Industrial buildings	878	6,843	23,124	35,881	62,911	5,078	134,717	278,514	275,947	+ 0.9	18,635
Com'l. buildings, residential	10,690	119,525	53,039	43,443	73,863	26,580	329,170	827,280	441,271	+ 92	33,525
Other commercial buildings	4,866	8,316	11,465	17,050	17,339	32,492	91,468	234,582	158,718	+ 48	6,458
Unclassified	100	5,404	21,444	1,519	38,489	1,029	67,985	121,159	81,176	+ 49	6666
Total private	16,534	140,090	109,012	97,893	194,707	65,179	623,415	1,463,500	947,776	+ 54	58,717
Total Engineering Construction											
March, 1950 — 5 weeks	37,687	219,260	175,672	134,148	282,338	144,348	993,453				70,563
February, 1950 — 4 weeks	57,860	191,947	100,214	76,498	164,696	93,006	686,221				52,433
March, 1949 — 5 weeks	21,206	156,519	88,476	106,558	230,870	144,970	743,529				54,653
Three Months — 1950	124,158	616,162	366,665	353,010	596,676	534,478		2,595,149			130,771
Three Months — 1949	58,027	488,866	275,458	212,734	511,754	325,680			1,872,439		118,419
% Change '49 to '50	+ 114	+ 26	+ 33	+ 66	+ 16	+ 64				+ 39	+ 10

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 72, went to press.)

Gas-Gathering Lines—Latex Construction Co., Houston, has been awarded a $1,650,000 contract and O. R. Burden Construction Co., Eunice, La., a $1,850,000 contract for sections of gas-gathering lines in Louisiana and Texas by the Transcontinental Gas Pipe Line Corp., Houston. The total cost of the 541-mi line between Mercedes, Tex., and Eunice, La., is to be about $21,616,000.

New York State Thruway—Madigan & Hyland, consulting engineers, Long Island City, N. Y., have been selected by the New York State Thruway Authority, Albany, to make a study of traffic revenues, economic advantages and construction costs for planning, financing and constructing New York State Thruway System.

Highway and Bridge—Pennsylvania Highway & Bridge Authority, Harrisburg, received low bid for constructing divided highway in Erie County from Baldwin Brothers Paving Co., Cleveland, at $2,532,136; also for superstructure bridge over Monongahela River, Washington, Fayette and Westmoreland Counties, from Fort Pitt Bridge Works, Pittsburgh, $2,007,145.

Auditorium—City of Des Moines, Ia., and Veterans Committee, plan $5,250,000 Veterans Memorial Auditorium in Des Moines to cost about $5,250,000. A $2,500,000 bond issue has just been voted. The Des Moines Architects Commission is architect.

Connecticut River Bridge—State of Connecticut, Hartford, plans bridge over Connecticut River, from Hartford to East Hartford, including expressway and connections with Wilbur Cross Parkway and Glastonbury Expressway. Estimated cost of the bridge project is $15,000,000.

Gas Reforming Units—Chemical Construction Corp., New York, has been awarded contract by the Tennessee Valley Authority, Knoxville, for gas reforming units to permit manufacture of ammonia by use of natural gas. Cost will be about $1,300,000.

Paving and Drainage—Charles P. Smith Associates, Port Arthur, Tex., and George J. Schaumburg, Beaumont, Tex., are making plans for $8,000,000 paving program and a $1,400,000 city-wide storm sewer project, both for Port Arthur.

Refinery—Canadian Oil Companies, Ltd., Toronto, Ont., plans oil refinery and tank farm, near Sarnia, Ont., to cost over $5,000,000.

Seminary—J. J. Powers Co., Cambridge, Mass., will construct seminary building for New Minor Seminary at Jamaica Plain, Mass. to cost about $1,500,000. Whalen & Westman, Boston, are architects.

Plant Expansion—International Minerals & Chemical Corp., Bartow, Fla., plans chemical plants, machine shop, warehouse, service building, office and laboratory at Bartow, at $4,000,000.

Housing—The H. S. Brownett Co., Jacksonville, Fla., plans to construct by own forces a $2,500,000 residential development at Jacksonville.

Dredging—U. S. Engineers, Boston, received low bid March 23 from Gahagan Construction Co., New York, at $1,193,500 for dredging in Fall River, Mass.

Bridges—American Bridge Company, Philadelphia, was low bidder at $2,135,576 for superstructure of bridge in Allegheny County. The Pennsylvania Turnpike Commission, Harrisburg, opened bids on March 29. The Turnpike Authority has also awarded contract to American Bridge Co., for superstructure of bridge in Beaver County at $1,568,272.

Interceptor Sewers—Decatur Sanitary District, Decatur, Ill., plans two interceptors and extending sewers to serve new areas of city. Estimated cost is $3,000,000. Alex Van Praag, Jr., Decatur, is the engineer.

Housing—New Britain Housing Authority, New Britain, Conn., received low bid for housing project from Fusco Amatruda Co., New Haven, at $1,715,000. Henry Ludorf, Hartford, is architect.

Army Base—Canadian Commercial Corp., Ottawa, Ont., plans army depot at Namao, Alta., including workshops, supply and ordnance depots, to cost about $8,000,000; housing for army personnel, $4,500,000, and housing for air force personnel, $4,000,000.

Bridge—Seaboard Airline Co., Norfolk, Va., received a joint low bid from C. T. Thomason, Greenwood, S. C., and McMeekin Construction Co., Cheraw, S. C., at $1,496,886, for railroad bridge over Savannah River at Savannah, Ga. Howard, Needles, Tammen & Bergendorff, Kansas City, Mo., are engineers.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Apr. '50	491.95	236.47
Building Cost	Apr. '50	362.78	196.11
Volume	Mar. '50	351	154

Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

	Week of Apr. '6 1950	Cumulative 1950 wks.	Cumulative 1949 wks.	% chge
Federal	$22.0	$437.2	$329.6	+33
State & Mun.	65.8	782.3	683.7	+14
Total Public	$87.8	$1,219.5	$1,013.2	+20
Total Private	216.6	1,680.1	1,037.4	+62
U. S. Total	$304.4	$2,899.6	$2,050.7	+41

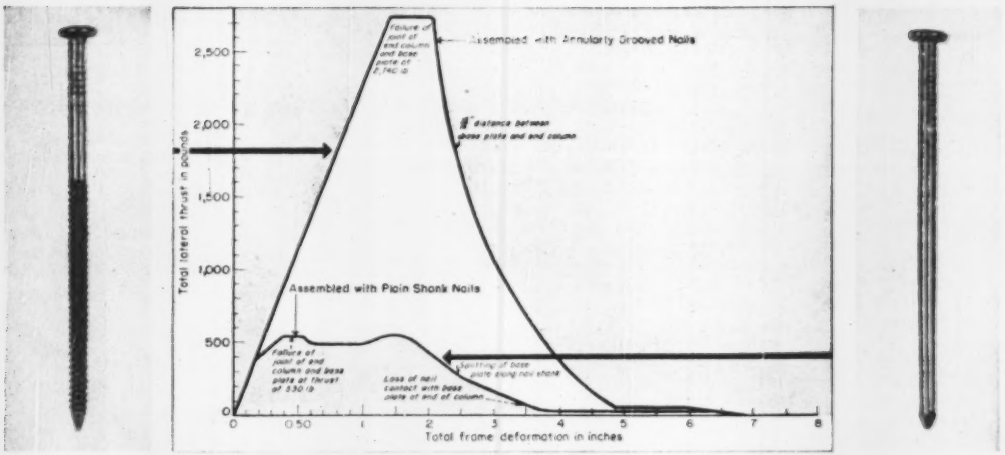
Contracts by type of work

	This Week	Cumulative 1950 wks.	Cumulative 1949 wks.	% chge
Waterworks	$4.1	$76.5	$37.1	+80
Sewerage	3.6	61.7	54.5	+13
Bridges	4.7	80.4	91.3	−12
Highways	24.6	256.9	141.3	+82
Earthwork, Waterways	12.0	107.3	173.5	−38
Buildings, Public	25.4	544.7	450.0	+21
Industrial	16.6	295.1	307.5	−4
Commercial	190.6	1,252.3	641.9	+50
Unclassified	13.6	230.7	153.7	+50

NOTE: Minimum size projects included are: Waterworks and waterway projects, $25,000; other public works, $50,000; industrial buildings, $65,000; other buildings, $250,000.

New capital for construction

	Cumulative 1950 wks.	Cumulative 1949 wks.	% chge
NON-FEDERAL	$1,186.8	$1,315.8	−10
Corporate Securities	490.3	635.2	−23
State and Municipal:			
Excl. Housing	556.7	539.3	+6
Housing	139.8	141.3	−25
Total Capital	$1,186.8	$1,315.8	−10



Load-deformation diagrams for racking tests made on wood frames show that . .

Grooved Nails Strengthen House Frames

E. George Stern

Research Professor of Wood Construction, Virginia Polytechnic Institute, Blacksburg, Va.

YOU CAN IMPROVE thrust resistance of the houses you build by using annularly grooved nails. That's what was discovered from tests performed in the Wood Research Laboratory of Virginia Polytechnic Institute.

While structural members of housing frames can be satisfactorily designed, their joints are the critical elements. Their resistance to racking forces, such as lateral thrusts during severe storms or during settling of the foundations, determines the strength of the frame. Since efficiency of joints depends on nails used, the main problem is: can strength of housing frames be increased by changing plain-shank to annularly grooved nails of improved design.

Some experimental data are available. Alan D. Freas, reporting the results of tests made by the Forest Products Laboratory (ENR Oct. 17, 1946, p. 519), determined that:

1. Changing from 8-d to 10-d nails for fastening horizontal sheathing to studs increased the ultimate resistance to racking loads 1.4 times.

2. Green-lumber frames tested after one-month seasoning offered a 1.3 times smaller thrust resistance than dry-lumber frames.

3. Frames with diagonal let-in bracing offered a 2.9 times larger thrust resistance than unbraced frames.

Mr. Freas' data, however, did not throw light on the effectiveness of the joints. Therefore, tests on performance of wood frames under racking loads appeared justifiable to evaluate joint efficiency.

• **Six variables tested** – Unsheathed test frames were built according to prototypes erected in Massachusetts,

TABLE I Results of Tests on Annularly Grooved Nails

Wood Grain	Percent Driving	Moisture Testing	Nail Size In.	Withdrawal Resistance—Lb Plain-Shank Nail	Withdrawal Resistance—Lb Annularly Grooved Nail	Lateral Load Capacity—Lb Plain-Shank Nail	Lateral Load Capacity—Lb Annularly Grooved Nail
Side	20	20	3×0.148	366	895 (+125%)	567	1,059 (+ 87%)
	20	20	3½×0.162	429	1,015 (+137%)	678	1,198 (+ 77%)
	20	10	3×0.148	78	672 (+762%)	383	875 (+128%)
	20	10	3½×0.162	85	776 (+813%)	496	938 (+ 89%)
	10	10	3×0.148		934*		924*
End	39	39	3×0.148		411*		
	39	39	3½×0.162	229	468*(+104%)		
	12	12	3×0.148		356*		
	12	12	3½×0.162	388	576*(+ 48%)		

* Improved groove design

6 ft long and 8 ft high, of 2x4-in. dense, select, structural southern pine. Some frames were constructed of dry wood and some of green wood. They were assembled with either plain-shank or annularly grooved nails. Tests were made immediately after assembly or upon 3-month air-seasoning.

Oven-dry specific gravity of the wood averaged 0.5. At test, the moisture content of the dry lumber was 12% and moisture content of the green lumber 39%.

The plain-shank and annularly grooved nails used for frame assembly were made of low-carbon SAE 1010 steel, with flat heads and diamond points. The 3 and 3½-in. long annularly grooved nails with their doubler-ring feature—manufactured by the Independent Nail & Packing Co. of Bridgewater, Mass., sponsors of the tests—had grooves spaced 0.06-in. c.c., beginning 1 and 1⅛ in., respectively, below the head.

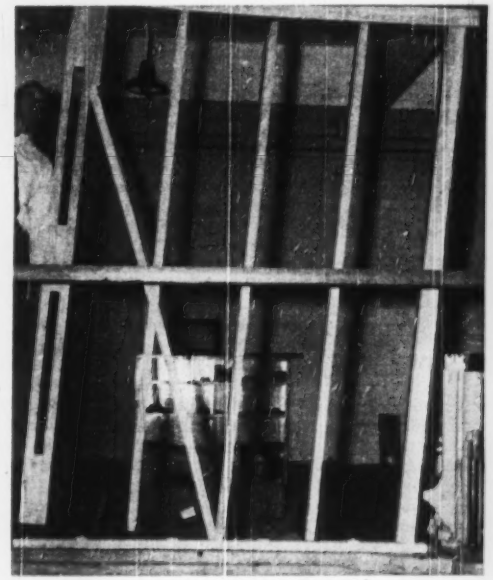
Tests previously performed on axial withdrawal resistances and lateral load-carrying capacities of these nails driven to ¾ shank penetration into the side or end grain of southern yellow pine gave the nail properties shown in Table I.

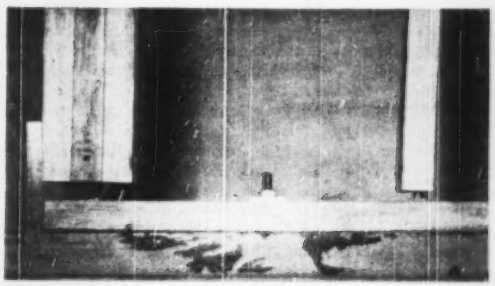
Thus, compared to plain-shank nails, the annularly grooved nails on the average offered from 2.3 to 9.1 times greater withdrawal resistances and from 1.8 to 2.3 times greater lateral load-carrying capacities in side-grain southern pine and from 1.5 to 2 times greater average axial withdrawal resistances in end-grain southern pine.

In assembling the frames, the two top plates were fastened to the studs with 3½-in. long, 0.162-in. wire-dia nails. For all other joints, 3-in. long, 0.148-in. wire-dia nails were used.

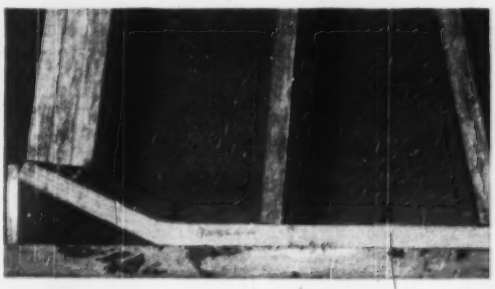
• **Loads compared**—With static, horizontal racking loads applied, all dry-lumber frames that were tested immediately after assembly failed in withdrawal of the nails. The green-lumber frame tested immediately upon assembly with plain-shank nails also failed in withdrawal of the nails, but the one tested immediately upon assembly with annularly grooved nails failed, instead, in flexure of the frame-base plate.

Tested upon 3-month air-seasoning of the green-framed structures, initial failure of the frame assembled with annularly grooved nails again occurred in flexure of the frame-base plate, while final failure of both frames assembled with plain-shank or annu-

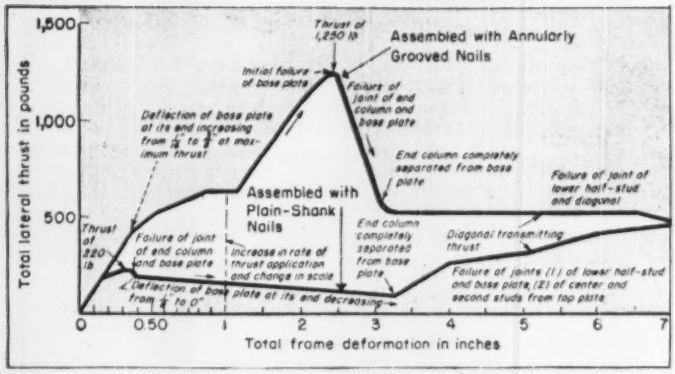




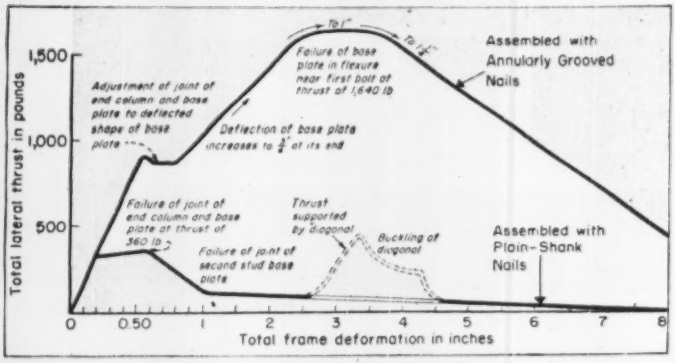
HOUSE FRAME built of green lumber assembled with plain-shank nails withstood a racking load of 360 lb, failed when nails pulled out from the base of the end stud. In contrast . . .



ANOTHER FRAME of green lumber assembled instead with annularly grooved nails withstood a test load of 1,640 lb. This one failed when the base plate broke.


Total lateral thrust in pounds
1,500
1,000
500
0
0.50
1
2
3
4
5
6
7
Total frame deformation in inches
Thrust of 1,250 lb
Assembled with Annularly Grooved Nails
Initial failure of base plate
Failure of joint of end column and base plate
Deflection of base plate at its end increasing from 1/8 to 3/4 at maximum thrust
End column completely separated from base plate
Failure of joint of lower half-stud and diagonal
Assembled with Plain-Shank Nails
Thrust of 320 lb
Failure of joint of end column and base plate
Increase in rate of thrust application and change in scale
End column completely separated from base plate
Diagonal transmitting thrust
Failure of joints (1) of lower half-stud and base plate, (2) of center and second studs from top plate
Deflection of base plate from 1/8 to 0" at its end decreasing

DELAYED THRUST RESISTANCE of southern yellow pine housing frames assembled when green with plain-shank or annularly grooved nails and tested upon seasoning to 12% moisture content. Grooved nails increased strength 5.7 times.


Total lateral thrust in pounds
1,500
1,000
500
0
0.50
1
2
3
4
5
6
7
8
Total frame deformation in inches
Assembled with Annularly Grooved Nails
Failure of base plate in flexure near first bolt at thrust of 1,640 lb
Adjustment of joint of end column and base plate to deflected shape of base plate
Deflection of base plate increases to 3/4" at its end
Failure of joint of end column and base plate at thrust of 360 lb
Thrust supported by diagonal
Buckling of diagonal
Failure of joint of second stud base plate
Assembled with Plain-Shank Nails

THRUST RESISTANCE of green southern yellow pine housing frames assembled with plain-shank or grooved nails. Grooved nails increased strength 4.6 times.

larly grooved nails was in withdrawal of the nails. Thus, the strength of some of the lumber was exceeded by the strength of joints made with annularly grooved nails, while the strength of identical joints made with plain-shank nails was always found weaker than that of the framing lumber.

The racking loads observed are given in Table II.

Since all possible variables were excluded and special attention was paid to matching of the conditions during construction of the frames and during testing, the following conclusions are considered justified, although they are based on individual tests:

1. Use of annularly grooved nails increased the strength of the dry-lumber frame immediately upon assembly 5.2 times, that of the green-lumber frame immediately upon assembly 4.6 times, and that of the green-lumber frame tested upon 3-month air-seasoning 5.7 times.

2. Use of dry instead of green lumber increased the strength 1.5 and 1.7 times, depending on whether the nails had plain shanks or were grooved.

3. Testing upon seasoning of the green-framed lumber instead of immediately upon assembly wth plain-shank or annularly grooved nails decreased the frame strength 1.4 or 1.2 times, respectively.

Stronger house framing may reduce upkeep and repair costs, lengthen the useful life of a house, and make possible use of somewhat weaker sheathing or boarding material with, however, better insulating qualities. Therefore, architects, engineers, and builders should specify annularly grooved nails of improved design for framing joints to ascertain maximum efficiency for the framed structure.

TABLE II

Results of Frame Tests

Condition of Lumber Assembly	Condition of Lumber Testing	Nail Type	Racking Load—Lb Prop. Limit	Racking Load—Lb Ultimate
Dry	Dry	Plain-shank	340 (100%)	530 (100%)
Dry	Dry	Grooved	2,620 (771%)	2,740 (517%)
Green	Green	Plain-shank	330 (100%)	360 (100%)
Green	Green	Grooved	900 (273%)	1,640 (456%)
Green	Dry	Plain-shank	150 (100%)	220 (100%)
Green	Dry	Grooved	420 (280%)	1,250 (568%)

Dredge Works in Ocean To Rebuild Calif. Beach

WORKING virtually in the open ocean, a dredge has started the job of repairing the badly eroded beach at Santa Monica, Calif.

A 200-ft long electric dredge is working to remove a million cubic yards of sand deposited by shifting currents behind a breakwater, redepositing the dredged material to fill the eroded beach some miles to the south of the project.

Holder of a $247,000 contract, the Standard Dredging Co. says that this work is its most hazardous job in the past ten years, since there is no protective shelter nearby. The breakwater itself is submerged at high tide.

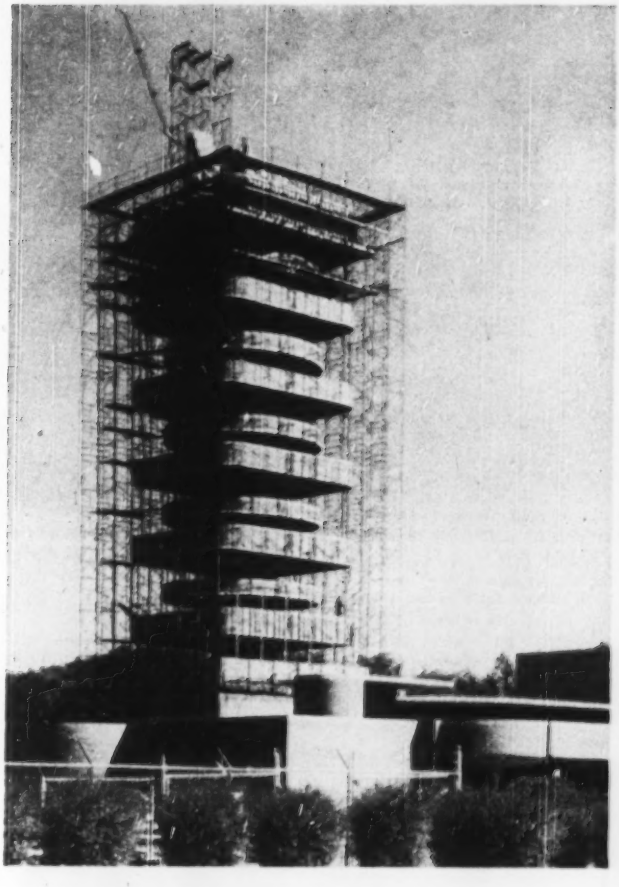
The dredge has a 30-in. suction inlet, but discharges through a 27-in. dia pipe. About 55,000 ft of pipe carries dredged sand to the eroded beach to the south. A peak day's operation has seen 27,000 cu yd removed.

The Southern California Edison Co. built special transformers to deliver 11,000 volts of power to the dredge. Transformers on the dredge itself step down the power for the three principal engines. The dredge uses its spuds and three cables (two of them fastened by anchors) for stabilization against ground swells and breakers.

Funds for the work come in part from a $325,000 joint fund set up by Los Angeles, Santa Monica, and the California Division of Water Resources in 1943.

S. A. Sellgren is general superintendent for the Standard Dredging Co. A. G. Johnson, of the Los Angeles Bureau of Engineering, was beach designer for the project. P. H. van Etten, principal hydraulic engineer for the California Division of Water Resources, represented the state.

Tree-Like Laboratory for Wax Research



WITH FLOORS cantilevered from a central core, a research laboratory now being built at Racine, Wis., more closely resembles a tree than it does a conventional building. On the "limbs" will be research facilities for 75 scientists of S. C. Johnson & Son, Inc., makers of wax products.

Construction started in May, 1948, and is scheduled to be completed this fall.

By proper timing, the contractor has been "out-of-the-weather" on a great deal of the work. Last winter (1948-49), he concentrated on a honeycomb of tunnels, storage and special service rooms at basement level. Of reinforced concrete and brick, these were not too difficult to protect from the cold. Last fall, he placed all the concrete before cold weather set in, then completely enclosed the building by mounting weatherproof building boards on tubular scaffolding that encircled the structure. This winter, he installed electric lights and unit heaters so that erection of exterior walls, service facilities and interior finish might go forward with a minimum of inconvenience from snow and cold.

• **Revolutionary in Design**—The 15-story, million-dollar laboratory, rising 154 ft above ground level, is an outstanding example of reinforced-concrete cantilever floor construction. All 15 floors project out from a central core of irregular shape. Nine floors are 40 ft square, and six are circular, 38 ft in diameter. Starting at the 3rd floor, each main floor alternates with a mezzanine. At second-floor level, a glass-enclosed runway connects the laboratory with a 3-story administration building which was built back in 1940.

The central supporting core is relatively small—13 ft in diameter at its narrowest point—and quite compact. It contains six vertical shafts: one 6½-ft dia shaft for a 600-fpm six-passenger elevator, one for a narrow stairway, one for service facilities and air supply, one for toilet facilities and two for exhaust air. A dumbwaiter also extends the full height of the building.

Hot air in winter and cool air in summer will flow up one of these shafts. The two exhaust shafts will carry off room air and gases from fume-hoods. Access to the 14 floors above the ground floor is gained via elevator and stairs.

• **Double Glass Wall**—Except for a 5½-ft band of brick and concrete at each main floor level, the entire structure will be enclosed in a double glass wall. Mezzanine floors also have a protective 3 ft 4 in. concrete-and-brick parapet, located inside of the glass wall.

The exterior face of the glass wall will be made up of 2⅛-in. OD glass tubing running horizontally around the building, spaced 2¼ in. c-c. There will be a total of 17½ miles of this glass tubing.

The interior face of the wall will be ¼-in. plate glass—about 15,000 sq ft in all—separated from the tubing by a 3-in. air space. The double glass wall will extend from top of main floor parapet to bottom of the next main floor above (12 ft 7 in.); leaving an open space around the circular mezzanine floors.

Special cast aluminum stanchions, 12 ft 7 in. long, will support the glass tubing and plate glass. Stanchions are braced to each mezzanine floor. Their outer edges will be formed in a series of half-circles at 2¼-in. c-c. to receive the glass tubing. The tubing will be tied to the stanchions with

stainless steel wire, and caulked its full length with a specially fabricated plastic glazing strip.

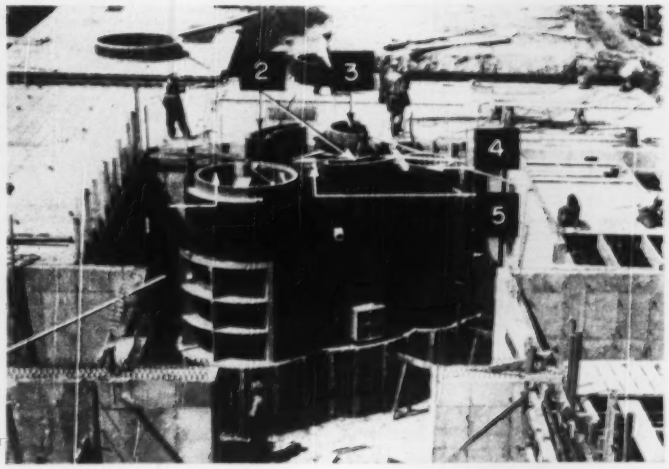
• **Long Cantilevered Floors**—Main floors will cantilever a maximum of 13½ ft to each side, and 21½ ft to each corner, from the supporting central core. Maximum cantilever of the mezzanines is 12½ ft.

Both types of floors are of hollow construction. Top slabs are 2½ in. thick. Bottom slabs for the main floors vary from 10 in. at the core to 7½ in. at the parapet. Bottom slabs for mezzanines vary from 5 in. at the core to 3½ in. at the parapet.

The space between top and bottom floor slabs (18½ in. maximum for main floors and 20 in. for mezzanines) forms a plenum chamber, containing air-conditioning and other piping.

The clear distance from mezzanine to main floor at the central shaft is 6 ft 5½ in., and from main floor to mezzanine 6 ft 9 in. Maximum clearance at the outside wall is 8 ft 9 in.

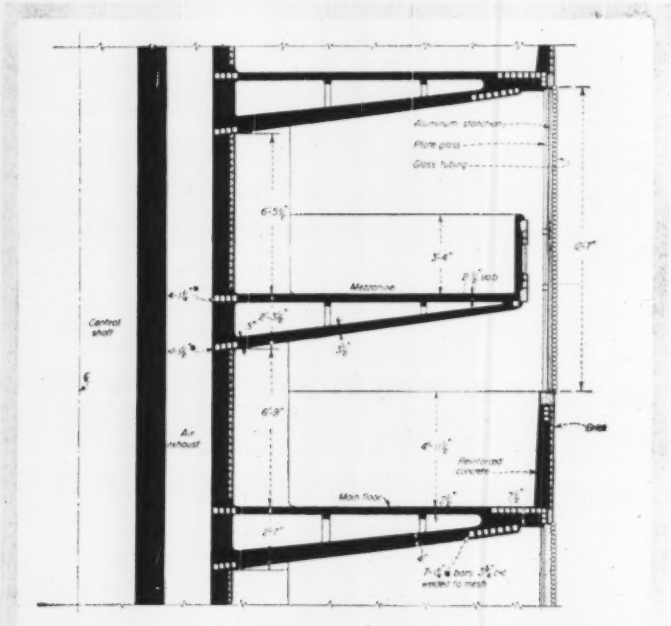
Each main floor of the tower contains 82 cu yd of heavily-reinforced concrete. The entire job contains 9,000 cu yd of concrete, 504 tons of reinforcing bars, 542 tons of expanded metal reinforcing, and 388,000 bricks.



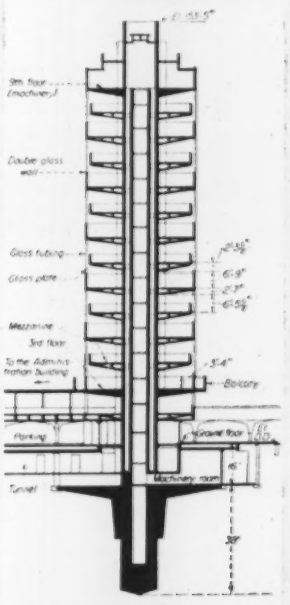
CENTRAL CORE contains all services necessary to operation of the research tower: (1) Elevator shaft; (2) exhaust shafts; (3) fire stairs; (4) toilet rooms; (5) service facilities and air supply.

With their double glass walls, all floors of the tower will be brilliantly lighted with sunlight. Each floor will be thermostatically air-conditioned, heated and completely serviced from the central shaft.

The total weight of the tower (16,000,000 lb) is supported entirely by

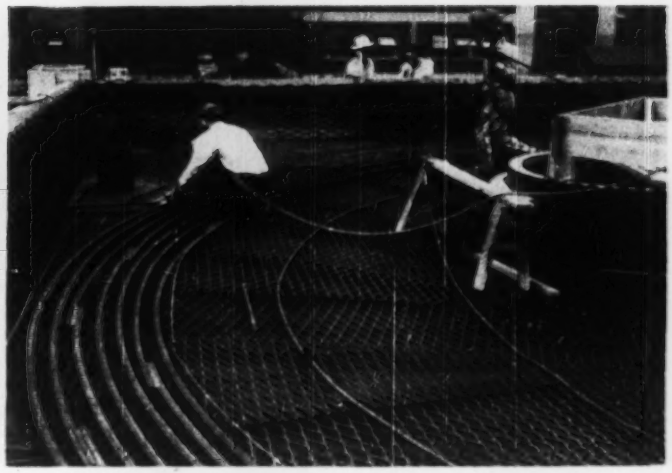


HEAVY REINFORCEMENT—Stress rings of 1¼-in. bars and expanded metal are needed to carry the long cantilever spans, which reach a maximum of 21½ ft, to the corners of the main floors and 12½ ft for the mezzanines.



TAP-ROOT foundation goes deep into the ground, lower floors branch out, and upper floors cantilever from the concrete core.

CAST ALUMINUM STANCHIONS extend from main floor parapet to next main floor support glass exterior wall.



NO TIES—Stress-rings of heavy bars were lapped and welded, and the expanded metal was welded at all points of contact. Reinforcement shown here for the bottom slab of cellular floors was duplicated in the top slab.

a central, reinforced concrete foundation shaft, extending 50 ft into the ground. When excavating for this shaft with a crane and clamshell, a huge mirror had to be mounted on one side of the hole with its face deflected downward to enable the crane operator to see down into the hole. This hole was so small at the bottom that there was room for only three workmen and a ½-yd clamshell.

Foundations are in stiff clay, easily excavated by power shovel and power spade. For the 50-ft deep shaft, a circular cofferdam of steel channel rings and vertical 4x4-in. sheathing was sunk along with the excavation.

This foundation shaft is solid reinforced concrete 13 ft. in diameter for the lower 20 ft. It then mushrooms out to 60 ft dia at ground level to carry the central cellular shaft which, in turn, supports the cantilevered floors.

• Tubular Scaffolding—The contractor had little choice as to methods of constructing the tower. The only solution was to use tubular scaffolding completely surrounding the structure. All materials were hoisted up a twin-shaft materials tower or a three-story mast hoist; none could be taken up the small shafts in the center of the concrete tower.

The tubular scaffolding was erected to a height of 160 ft and the materials tower to 187 ft. Both were well braced, since they were to stand at least 18 months before coming down—about 12 months for placing concrete in the tower and 6 months for installing the double glass wall and finishing the building.

The cantilevered floors together with their corresponding sections of supporting cellular core were erected in succession—concrete in each floor being placed on plywood and timber formwork rigidly supported on adjustable steel posts setting on the floor below.

To speed the job and allow sufficient time for curing the concrete in each floor before removing forms, the contractor made two complete sets of panel forms for a main floor and two sets for a mezzanine.

Exterior forms for the central shaft were made up in panels, and were reusable. Interior forms for the six shafts, however, were not reusable. Due to the sharp curvature of these forms they were made of ¼-in. plywood on vertical 2x4 wales, spaced 4 in. cc. Only the wales were reusable.

• Pea-Gravel Concrete — The long cantilever spans of the floors called for an unusually heavy concentration of large reinforcing steel. This made placing of the concrete very difficult, even though it was made of pea-gravel aggregate. Added to this was the fact that all service facilities had to be placed in each floor as it was built—and the result was a terrific concentration of craftsmen and laborers on each floor.

But despite all the confusion, practice made near perfect. It took seven weeks to construct the first floor above ground level, but after that the contractor averaged one floor every three weeks.

Ready-mixed concrete, specified for the job, was delivered in trucks, hoisted up the materials tower in a ¾-cu yd bucket and wheelbarrowed into place. Concrete runways extended from the central core to the tubular scaffolding. An entire floor and its supporting length of central core were poured in one operation.

Reinforcing in the cantilevered floors consists of 1¼-in. round bars and expanded metal. All joints in the reinforcement were welded instead of wired, and the main reinforcing bars were lapped and welded with a three-pass heavy fillet weld.

The heavy concentration of reinforcement in the research tower called for a high-slump concrete with a compressive strength at 28 days of 5,000 psi. This was secured with the pea-gravel aggregate, seven sacks of cement per cubic yard of concrete, a cement-dispersing agent and sufficient water to give a slump of 6 in.

• Contractors and Architects—Wiltscheck and Nelson, of Racine, are the general contractors. B. F. Wiltscheck is general manager, Geo. Nelson, superintendent of construction; and Jacob Stocker, assistant construction superintendent.

Frank Lloyd Wright is the architect for the entire project, which includes several 2 and 3-story buildings around the tower. J. V. Steinle is director of research and development for S. C. Johnson & Son, Inc., and John Halama is resident engineer.

Throw-away bits will out-perform carbide inserts in rock that shatters

Best Bit Choice Depends on the Rock

Chandler L. Bush

Sales Engineer, Calumet and Hecla Consolidated Copper Co., Calumet, Mich.

ALTHOUGH a trend away from the reconditionable steel bit for rock drilling was set forth in the article "Carbide Insert Rock Bits (ENR Feb 9, p 35), the actual trend is toward an economic choice among three types: the detachable carbide-insert type; the intra-set type (carbide inserts integral with rods); and the low-cost, one-use or "throw-away" steel type.

It is well to consider that there are 1500 rock variations before making any general statements concerning rock-drill adaptability. Generally, rock is classified as "hard," "medium" and "soft," with intermediate gradations. But hardness alone is far from the critical factor in rock "drill-ability." Toughness, or inherent strength, is of greater importance and, together with abrasive quality, dictates the correct selection of the drill bit that can give, not the cheapest cost per foot of hole, but the cheapest cost per ton or yard of material drilled. This means productivity, the end sought both in mines and on construction projects.

• **Friability influences choice**—Friability—the tendency to shatter—is a function of toughness. Some extremely hard rocks are highly friable. These rocks are impossible to drill at a reasonable cost with insert bits, yet one type of detachable single-use bit is giving a lower cost per ton of ore produced than ever before has been obtained. Those familiar with the Tri-State lead zinc chert, with the Malvern, Arkansas ground, the Northern Arizona banded chert, and the broken quartzites of many districts will recognize the factors involved.

In such cases, overdrilling (hole-size greater than gage of bit used) accounts for bit gage loss because of the peening effect of the lateral motion of the bit in the hole. When these rocks are highly abrasive, tungsten carbide bits fail because the steel material supporting the inserts is cut away too rapidly. In such ground, the one-use bit is most practical, particularly if it is of the pilot type, which prevents extreme gage loss (a protrusion acts as a guide that prevents the lateral action so prevalent in overdrilling-type ground.)

• **Slip-on feature useful**—Again, in hard grounds that overdrill there is no dampening effect or drag of the reaming surfaces of any bit against the walls of the hole. Therefore, the reactive force causes a threaded bit to run alternately tight and loose on its connection, contributing to rapid rod-thread wear, and breakage and stripping of the thread in the skirt of the bit. Such ground is better suited to drilling with a bit with a slip-on connection, which obviates the mechanical losses inherent in a threaded connection. In some rocks such losses can amount to 20% in drilling speed.

In some such cases the integrally-set tungsten-carbide type drill steel is superior to either the detachable carbide bit or the single-use throw-away type.

The potential available in detachable or non-detachable tungsten carbide bits is achieved only when the actual drill steel and connection lives approach the life of the bit. It becomes increasingly costly per ton of rock broken to use tungsten carbides in rock where rod or connection failures occur prematurely, with subsequent loss of the drill bits, though considerable drilling still would have been available from the bit proper.

• **Type of cuttings important**—An extremely important ground characteristic, again a result of its inherent toughness, is the type of cuttings made. Jasperoids and numerous other strong, hard, "tight" rocks tend to produce a cutting that is extremely powdery. Hence cutting clearance in a bit is of little importance, and wing buttresses must be very heavy to withstand the shock loads and provide large reaming surfaces. Both tungsten-carbides and the older style re-usable steel bits have these characteristics.

Conversely, many cherts, while very hard, are so friable that cuttings are chunky and pebbly, and bit clearance is of major importance. Since an inherent design requirement is for massive wings in a tungsten carbide insert bit, it follows that such bits do not function well in this particular ground.

In limestones the varieties are so numerous in strength characteristics that no rule can be set forth to cover all conditions. Generally cutting-removal is the problem in such rock, and good bit clearance is necessary to maintain high drilling speeds. Here, the pilot-type, high-clearance, one-use bit produces clean cuttings of large size, yielding top drilling speed and minimum gage and face loss.

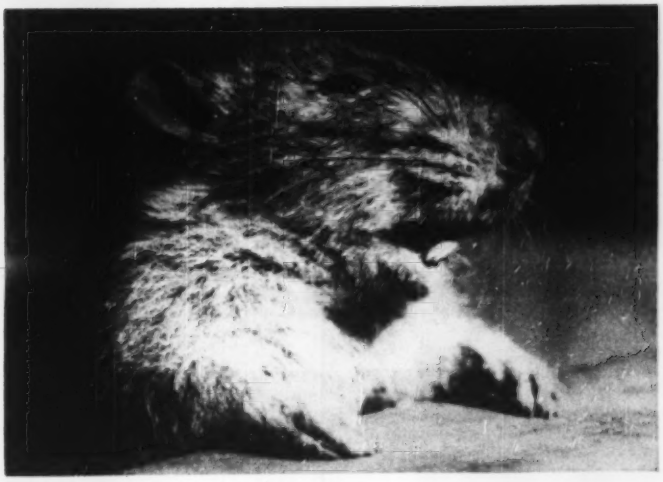
On a somewhat different tack (referring to Table I in Mr. Lindgren's article) in making cost and footage comparisons, it is obvious that cost and footage comparisons should be made so as to put competitive types on an equal basis. To compare a 1⅝-in gage bit against a 2-in bit is a practice that gives misleading results. The practice cannot be justified from the standpoint of sound engineering, cost, or sales procedure. The total cubic unit removed in drilling rock varies directly as the square of the diameter of the hole. Any test comparison made under dissimilar conditions can result in costly misapplication when put into wide-scale production uses.

• **All factors must be considered**—Obviously, no flat statement of bit suitability can be made regarding a particular design or type of bit. In any drilling problem due consideration must be given the factors in the following check-list.

1. Ground
   a. Hardness
   b. Toughness
   c. Abrasiveness
   d. Cutting size and nature
   e. Caves, ravels, slips, fractures
   f. Wet or dry drilling
2. Machines and mountings
3. Air and water pressures
4. Drill rod or steel sections and lengths
5. Drill cycles
6. Productivity
7. Loss factor

If each factor receives consideration, the proper bit or combination of bits for most economically solving a given rock-drilling problem can be found. There is no cure-all bit manufactured today, but the total selection of good bits available to the operator is such that reasonable care in making the proper application can materially decrease bit and steel cost per ton of rock produced compared to costs under the older standards of practice.

One of the hottest topics discussed by rock excavation men since the war has been the choice of drill bits: Carbide-insert vs. one-use steel. Recently *Engineering News-Record* published a story on carbide-insert bits, (Feb. 9, 1950, p 35). The following article, telling where one-use bits fit in the picture, is a comment on the carbide-insert article. Other discussions appear in current Reader Comment pages.—Editor



The Rat

What engineers and municipal officers can do about a billion-dollar-a-year menace

MAN'S AGE-OLD ENEMY—the rat—is still with us—only more so. He costs us a mint of money needlessly every year. He's in our buildings. He starts fires and destroys property with a wantonness seldom matched. He messes up our food. The dirty beast scampers across cribs and bites infants. And he threatens our health every day as a carrier and principal cause of diseases.

What are we doing about it? Very little. Much more must be done, says John M. Henderson, who is Columbia University's professor of sanitary science.

Here's how the situation stands and some suggestions by which the rat can be kept in his place:

Here's how to get rid of them

The rat could probably be eradicated from some communities by heroic effort—but this effort, Henderson points out, would be nullified by imported rats. The rat must be considered a pest—entrenched and domesticated—that will be with us for a long time.

What then is meant by effective rat control? It does not mean eradication from a community—an impractical undertaking. It means that rat populations may be held down by application of sanitary measures, by rat-protecting faulty buildings, and continuing, practical killing campaigns, all within a reasonable expenditure of funds.

• Deny them food—It is theoretically possible to stamp out rats by denying them food and water. Some experts recommend concentration on sanitary disposal of garbage and protection of food and feed. These measures cannot be applied fully enough in the average city to cut rat populations down to the desired low level. But effective sanitation practices—most applicable in keeping rats out of yards—vitally complement control programs. Conversely, poor garbage sanitation makes effective control very difficult.

To prevent access to inside foods, best point of defense is shells of buildings—the focus of rat-proofing and stoppage.

Control aims to stamp out rats in buildings economically. First step reduction is wholesale killing. Elimination of survivors is tedious and expensive—but essential for lasting benefit. It should be noted that infiltration of other rats during survivor killing may nullify eradication, and is proportional to population pressure—size of neighborhood rat population.

By first reducing rat-population pressure, rat-stopping of buildings is simplified. Initial steps are: Area-wide prepoisoning and garbage sanitation.

• Kill rats—Rat killing is most effective when employed intensively. Rats can adapt themselves to gradual, prolonged attack and avoid traps and many poisons. Those who survive sub-lethal doses develop tolerance. For these reasons some poisons and trapping methods may be applied on several successive nights, but thereafter are ineffective if regularly used.

Large numbers of poisoned baits and traps should be placed at one time for sharp attack and prompt eradication. The most toxic and rapid-acting poison—that can be used with safety to people, pets and livestock—should be employed. Roof rats do not feed as readily on standard poisons and are trap-wary. ANTU, a newly developed raticide is very toxic to the Norway, but not to the Roof rat. Very lethal poisons, such as 1080, provide assurance against memory of near escape from less toxic compounds or traps, but are fatal to man and house pets. They can only be applied with the greatest care.

In considering means of attack, this should be kept in mind: The city block usually contains a rat community. Individual buildings may also support smaller communities and there is considerable rat-travel from building-to-building and in-and-outdoors—particularly where there is heavy infestation. These facts make the city block a useful unit of control.

• Rate of progress—Although some programs are satisfactory, new rat communities are being established faster than old ones are eliminated. Slow, permanent progress in controlling rats is preferable to rapid palliative measures—but the caliber should be commensurate with the problem. The following progress standards are reasonable—considering that many large city areas need little control:

City Size	Time for full control
10,000 and under	0.5- 2 yr
10,000-100,000	2- 5 yr
100,000-1,000,000	5-15 yr
over 1 million	15-20 yr

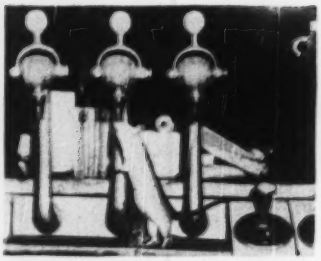
• Coordinated attack—Most cities can be zoned for rat prevalence. Extensive areas—single-family residential and some types of industrial and business districts—normally are either free from

or only lightly infested with rats, and limited measures will suffice, such as garbage sanitation alone.

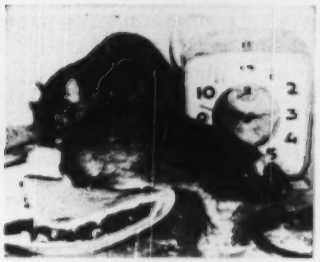
Other areas providing more abundant food and harborage for the rat populations are strong points of rat resistance and replenishment.

In these areas, no one technique will control rats—and keep them controlled. Several techniques have been worked out for combined attack on block-scale. Together, they are effective against rats in inclosed building areas. These measures are outlined according to operational sequence in the accompanying table.

Due to inattention plus palliative measures, the present situation demands an engineering solution to get progress by lasting-benefit measures.



RATS clamber over soda fountain in search of sweets at night and soil food-handling equipment. (USDA photos.)



WHO'LL EAT FOOD, knowing that it's been soiled by rats? But a lot of it, like the pie shown here, is.

• **Long-range improvement**—The measures set forth in the table make up a short-range program. While its benefits are lasting, they are in a sense makeshift because new breeding areas spring up. The long-range program calls for rat-resistant new commercial and apartment buildings and major alterations. Here is the place where sanitation-conscious engineers and architects must enter the picture.

Nearly every incorporated U. S. community has tried to control rats, but typical programs are low in quality and effectiveness. Some reasons for ineffective programs, Henderson recalls, are:

1. Lack of health units—While the

HERE'S WHY THEY ARE A MENACE

Dollar loss—Rat damage for the nation totals at least $1 billion annually, Henderson emphasizes. Rat populations in cities range from 0.2 to 10 per person and up to hundreds in rural areas with plentiful food.

Physical damage—Rats start fires by gnawing electrical insulation, consume and spoil human and animal food, and damage buildings and their contents. The losses are chiefly on farms and in businesses. Probably the greatest loss to business is from rat-damaged and spoiled food and feed. Beginning on the farm, it continues through the commodity warehouse, freight terminal, food-processing plant, distributor, wholesaler and retailer, and ends with the consumer.

Huge stocks of processed food, grain and sugar are contaminated in a sort time by rat droppings and urine, slashed containers and spillage. Annual property damage of all types is estimated at $20 per rat as compared to $2 for food actually consumed.

Dwelling-place loss is less, but just as real. Furnishing and clothing are slashed by rats for nesting materials. Furniture is ruined by tooth-conditioning gnawing.

Health hazards—Rat-borne diseases in the U. S. include: Plague, murine typhus and food infections. Plague and typhus are regional, but food infection is nation-wide. The first two are rat diseases (rats are the reservoir), rat fleas being the transmitting agent to man and among rats.

Bubonic plague is the most serious world-wide rat-borne disease, the "Black Death" having killed 10-million people in India in 10 yr. It has shown up in the U. S. during the last half century: San Francisco and Oakland, Calif. (twice), Pensacola, Fla., New Orleans, Seattle, and Beaumont, Port Arthur and Galveston, Texas. The last outbreak, in 1921, was brought under control by ruthless sanitation measures.

This dreaded disease, Prof. Henderson points out, appears to be permanently established in the West's wild rodents—ground squirrels, wood rats and meadow mice. It was first discovered on the Pacific Coast and spreading eastward to Kansas, it now covers about 40% of the country. Plague, he notes, is not important in cold northern states where rodent fleas are not abundant. Also, while plague in wild rodents poses a constant threat to man, it is only when infection spreads to domestic rats that the major hazard arises.

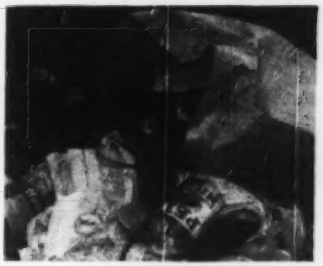
Murine typhus—An estimated 25,- to 30,000 cases of MT occurred annually in this country for 1944 and 45, topping off a 15-yr rise and spread. More than 90% of these were below a line from Charleston, S. C. to Dallas, Texas. Prevalence of MT, however, has declined greatly since 1945 due to extraordinary measures for control of rats and their fleas.

Food infections—Infections to food are principally by rat's feet, droppings and urine. Diseases transmitted from rat to man via food include: Diarrheas, dysentery, food poisoning, hemorrhagic jaundice and trichinosis. Transmission to food is established for each disease but number of cases cannot be determined accurately because of other routes of infection. An estimated 140-million cases of food infection, however, occur annually in the U. S. If rats were responsible for only 1% of these, Henderson figures, food would be the commonest channel of rat-borne disease.

Nuisance and esthetic objections—Amount of of food soiled by rat waste vastly exceeds that infected with disease organisms. But absence of food-borne disease does not prove lack of contamination. Rats soil food-preparation utensils; they have even been photographed licking soda fountain spouts.

When rats are numerous in dwellings, infants and young children are often bitten while asleep. Rat-bite fever—a rare disease—is transmitted this way occasionally. But wound infections are common. Several hun-

WOOD DOORS and frame are no barrier to the rat when he gets hungry. But steel-plate corners will stop them.



CARELESS disposal of garbage is a priceless gift to rats. Their food-getting problem here is simple.

local health unit is a logical agency for municipal rat control, most of them are so understaffed they cannot effectively tackle it. The conventional one-man setups seldom result in more than a "canned" annual newspaper story or one or two civic-group talks urging rat extermination. These efforts may be followed by an occasional clean-up campaign—that only makes rats unhappy for a week or two!

2. Lack of top-level interest—Mere existence of full time health units, however, doesn't assure effective rat control. Too many commissioners aren't sanitation-minded. Their interest—based on a medical heritage and a lack of sanitation education—is health work of a doctor-patient character. And, as a result, their staffs reflect these objectives.

3. Lack of money—Even directors, with balanced understanding of community health, are hard put to pursue rat control. Their scanty budgets prevent effective action. And their mandate is to protect health; other concerns are secondary. Rat control is a combined health and economic problem. In most cities the economic case for control equals or outweighs disease prevention. But limited approach to the problem favors inadequate solution.

• **Who should do it**—Some public agencies contribute health-economic-convenience value—a precedent for rat-control work. These are water, sewage,

dred cases of rat bite are reported annually in New York City. One study in Baltimore revealed that at least 93 persons (60% under 1-yr age) were bitten in a residential area of less than 2 sq mi during four years.

Species—Two important species of rats exist in the U. S. These are: Norway (**Rattus norvegicus**)—the brown, wharf or sewer rat; and Roof (**Rattus rattus**)—the black, grey or ship rat. Both transmit the rat-borne diseases to man.

Where found—The Norway rat is more numerous and widely distributed, probably in all 48 states. The roof rat is more numerous in the South's inland cities but appears to be migrating north and westward.

Habits—The Norway is stronger and tends to drive out the roof rat, but both are found in the same community as well as building in the South. The former more often burrows into the ground for nesting and access to buildings while the latter is a better climber and prefers overhead runs.

The Norway is partial to meat and grains while the roof rat likes fruits and vegetables. Neither, however, is choosey when hungry.

Sex life—Unlike other rodents, Norway and roof rats reproduce year-round. The former has from 7-10 rats per litter, depending on locality. Litters per year are greater in warm climates: In Baltimore about 6 and in Massachusetts 3 to 4. Pregnancy lasts 3-4 weeks. Most rats mature sexually in 5-6 mo. Some live several years but life span averages only 6 mo.

Rat equilibrium—Buildings, blocks and cities have rat-population equilibrium values. These are numbers of rats such places will support—determined by food, shelter and enemies—and change with these conditions. Abundance of food with nearby harborage for nesting and protection favors maximum population. Such ideal conditions are found in old, dark, poorly constructed buildings containing carelessly stored food and feedstuffs. Freight-terminal and wholesale-trade areas of old cities abound with such derelicts.

Recovery after destruction—Rat population could increase 20 fold in a year. But studies of free rats in a Baltimore natural environment show that stable, saturated rat populations—reduced 50 to 90% by trapping and poisoning—recover at a rate of about 4% of original level each month. Other studies indicate that—if rat populations are reduced in the fall—recovery will be complete in 12 mo, or in 6 mo if no reduction occurs in spring. Recovery is more rapid in the South.

Rats are bold—Using their senses intensively, they are persistent and resourceful. Their activity is proportional to need for satisfying fundamental drives—maternity, thirst, hunger, sex and curiosity.

Rats are smart—They possess memory and a high degree of gradual adaptiveness. Memory (retained habit) lasts from a week to a month but practice extends memory through life.

Rats are athletic—They are able climbers. They go up any vertical surface on which their toenails can catch. They climb smoother surfaces at inside corners or where pipes run close to the wall. They travel inside pipes as small as 3 in. and cross streets on overhead wires.

Young rats enter buildings through holes down to 0.5 in. and adults by gnawing edges of poorly fitted doors and windows.

Adult rats swim up to 0.5 mi. They can make a standing jump of 2 ft and a running one of 3 ft. They can leap from a high to lower building 12 ft apart.

The Norway rat burrows 6-18 in. deep for nesting and about 2.5 ft to obtain food, occasionally deeper.

garbage and waste disposal and occasionally mosquito control.

Because of the importance of environmental sanitation, it seems logical to Prof. Henderson that the newer, combined health-economic-convenience activities might be grouped under a new service department. The activities—that need a home—are: Housing sanitation, slum clearance, air pollution, insect and rodent control. Proper handling of these problems calls for engineering management, because of relationship and need for responsible action.

• **Harborage**—No building is completely rat-proof; rats sometimes dart through open doors. Once inside, they make themselves at home. They find temporary harborage in movable contents; incidental harborage is equipment and fixtures not readily movable; and structural harborage in the building's construction, i.e., hollow walls and floors, boxed-in columns and elevator shafts.

Structural harborage is most important. It gives the most protection to the rat, and is most difficult to seal off in existing buildings. Because built-in rat resistance adds but little to the cost of fireproofing, cities should require new buildings and major alterations to be rat-proof.

Such construction-control measures would eventually eliminate rat harborages, if effectively enforced. Over the long pull, they would reduce rats as much as 90% and greatly simplify control of the remainder, prophesies Prof. Henderson.

Many cities carrying out short-term control fail to require rat-resistant new construction. Others calling for it have poor enforcement. In many places, new harborage is being created faster than eliminated in old structures. Architects, engineers and building inspectors need to be alerted to the cheap, desirable benefits of building rat-resistant buildings in all communities.

Substitution of impervious materials (as required for fire protection) is first step in reducing structural harborage. Solid concrete eliminates hollows in the building shell; hollow tile and concrete block are OK if access to spaces is denied. Rat-resistant construction is concerned principally with minor design alterations and better workmanship. It aims to cut off the animals' access to building shells and prevent their movement, nesting and protection for themselves and their young.

• **Pest-control operators**—Pest control is big business in cities of more than 50,000 population and to a lesser extent in smaller ones. Organizations range from chains to one man. Most rat-killing is done under continuing contracts. Some have run 20 yrs. PCOs primarily kill rats—they don't build them out. Some have repair specialists, but in most places rat-stoppage and harborage elimination is done only by building-repair contractors.

Recurrent killing is useful in a well-planned municipal rodent control but it is of minor importance. In heavily infested areas, recurrent killing perpetuates the problem by diverting interest from fundamental solutions, costs more in the long run and smothers PCO interest in large-scale control. There's place for the PCO in a well-knit total-war campaign directed by a responsible agency.

• **Who does it?**—Rat-control work during the past 12 yr is of two types: In the South—publicly performed but paid for by property owner; in the North—privately done.

In the region south of Virginia and east of New Mexico, much rat control has been done by city forces. They tackle one block at a time until the business district is cleaned up. The public crews carry out inspection, estimating, rat-stoppage and killing. For the benefits gained, property owners reimburse these cities in proportion to work completed.

As an index of the extent of this work, 149 communities started lasting-benefit rat-control projects in 11 southern states between 1942 and '48. Labor per establishment (1947-1948) averaged 39 man-hr on 57 rat-stoppage projects, and 2.3 man-hr for poisoning on 127 jobs. Average hourly wage was about 85¢. Poison cost about 50¢ per establishment. Rat-stopping came to $30 per building.

Starting of programs in the South's larger centers, plus better PCO service, fosters greater use of private enterprise for rat control. Another trend is health officers are losing interest in efforts to build out rats. This results from the spectacular reduction in murine typhus by DDT dusting to wipe out rat fleas.

• **Killing by contract**—In the North, rat killing under private contract is almost exclusively by PCOs, except on public property. Few efforts included adequate food and garbage sanitation for rat reduction, and only very little

Combined Operation Steps for Effective Rat Control

	Technique	Purpose	Elapsed Time for Block
1	Improved garbage sanitation	Reduction of biological pressure	Should precede other measures by 0.5-1 yr., continue and encompass larger area than the block.
2	Area-wide cleanup	Removal of temporary harborage	Simultaneously throughout block.
3	Area-wide Pre-poisoning (Inside & Outside)	Reduction of biological pressure	Same day for entire block, usually repeated once or twice within 1 week
4	Rat-stoppage of building exteriors (Sealing entry places)	Prevent rat circulation during step 4, and prevent subsequent re-infestation. Provide lasting benefit	2 months for block, 1 month for building
5	Rat-eradication within buildings	Eliminate sealed-in rats	Start in each building immediately after rat-proofing. 1 week to 1 month for building, 2 months for block.
6	Periodic low-level re-inspection and maintenance (every 3 months)	Eliminate new rat leaks and new rats before population build-up	Perpetual

progress was made in block-wide multi-scale attack with rat-stopping and long-term rat-proofing. Kansas City, Mo. is one community that appears to have been quite successful in carrying out block-unit control with PCO cooperation.

• **Who is responsible**—Rat control, Henderson says, is a responsibility of local government. It should be set in motion and backed up by the mayor, council or city manager—not by the health department alone. Steps to be taken by city authorities are:

1. Adopt necessary ordinances, new or amended. Coverage includes new commercial and multiple-dwelling as well as existing buildings. Existing building regulations require property owner to carry out health-department specified corrective measures. Ordinances do not include detailed rules for rat proofing. These are worked up by health-department specialists to cope with particular problems. Samples ordinances are obtainable from Communicable Disease Center, U. S. Public Health Service, Atlanta, Ga.

2. Direct health commissioner to develop control work related to overall rat problem and appropriate funds to back him up.

3. Coordinate health, building, police, and fire and garbage-collection departments for effective rat control. Put a sanitary officer in each police precinct to enforce nuisance laws for clearing up garbage, little and rubbish; on private premises; gear-in garbage-collection and sanitation practices with rat control; educate building inspectors to sanitation needs; and establish inter-departmental liaison at operating levels.

4. Stimulate public cooperation by issuing smart public-relations information.

With proper authority, coordinated organizations and financial backing, the health department, Henderson continues, then swings into action. Its duties are to:

1. Train supervisory and worker personnel in rat habits, estimation and control. Enlist help of state and federal experts for training.

2. Survey food-handling areas to ferret out distribution, numbers and species of rats.

3. Work up control-program on survey data. Give proportionate value to control work in lightly, moderately and heavily infested areas. Set up budget on basis of time recommended to complete program (see above).

4. Start intensive clean-out where rat densities are highest first—not necessarily at sources of complaint. Clean up areas systematically.

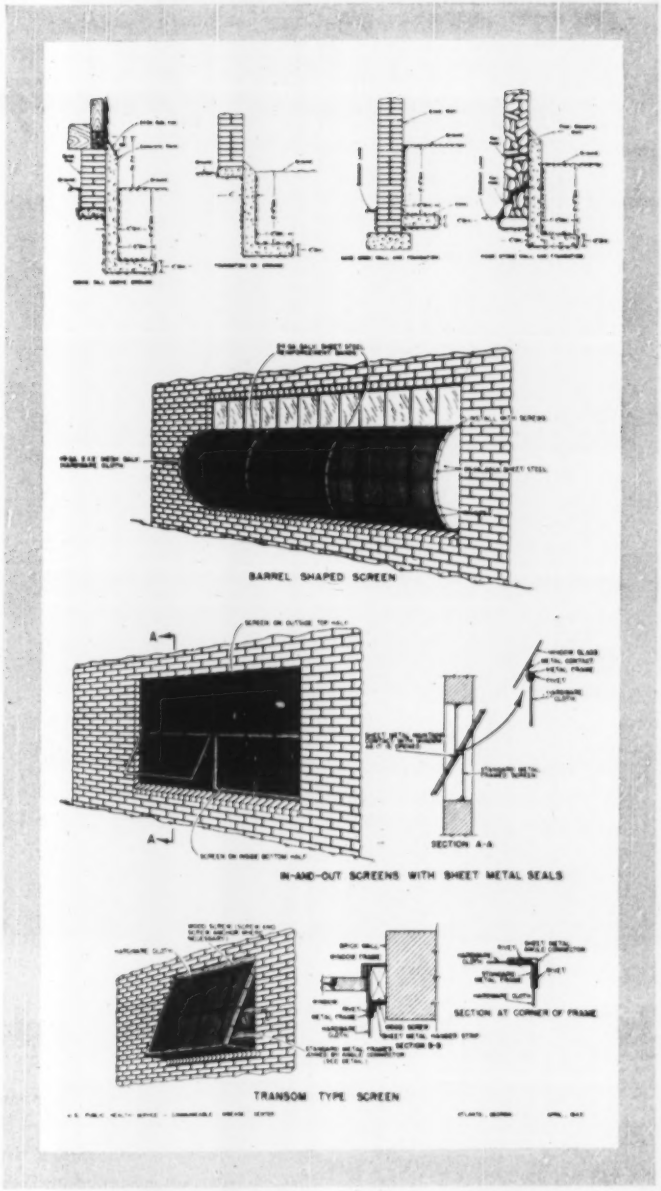
5. Get specialists working in the rat-control program. They're needed.

6. Get cooperation of pest-control operators. Explain program and turn work over to them where they are equipped to handle it. Help train their personnel.

7. Inspect completed areas to determine if work is satisfactory. Provide formal acceptance of satisfactory work.

8. Carry out a continuing public education campaign. Appoint Block Wardens to encourage citizen participation.

9. Pursue persuasive tactics—but don't hesitate to crack down on uncooperative offenders.



EXTERIOR CURTAIN WALLS (top) make soft foundations rat-proof. Swinging windows (bottom) with coarse, heavy screens get rats out. (U. S. Public Health Service.)

Countryside **Today...**

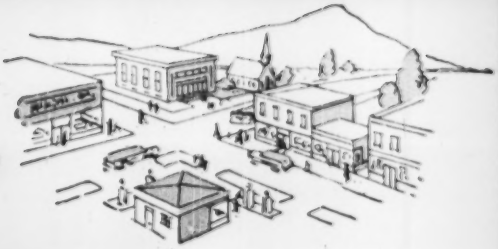
When *Speed* is the Need...Use CECO

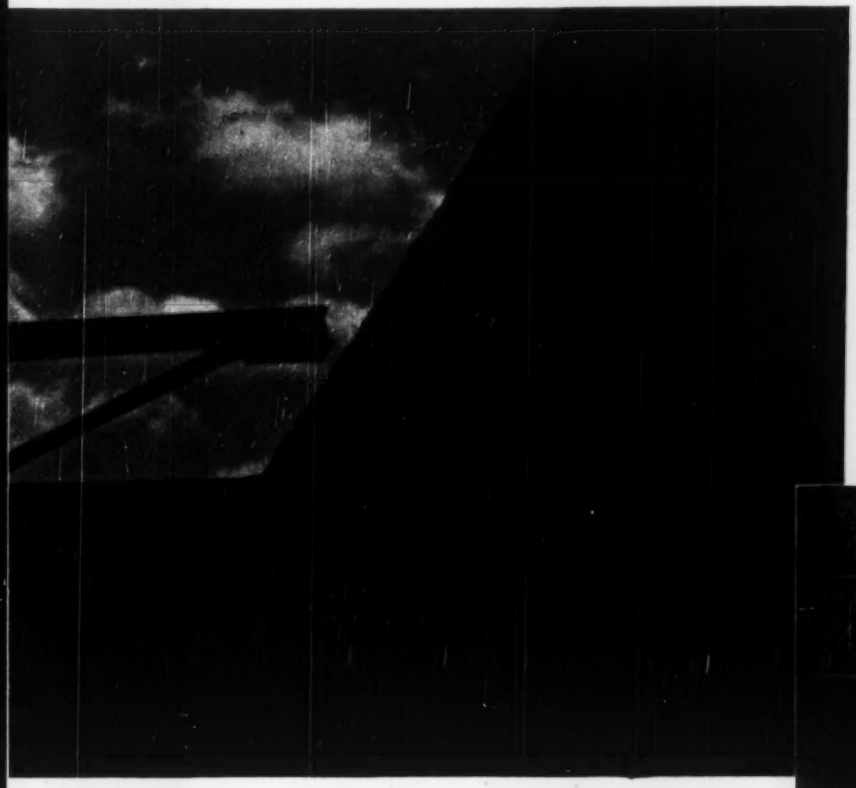
One day you pass a new development in the making, ground is broken, home foundations are in. Then, in just a short, short time, where once there was open countryside, a whole community, spick-and-span new, "has sprung up overnight." Chances are the stores, the school, the theatre . . . yes, most of the light occupancy buildings . . . were constructed with Open-Web Steel Joists. For that is the fastest way ever to build. There's no temporary formwork necessary . . . nothing to take down later on. Open-Web Steel Joists are self-centering . . . are placed on the wall structure and right away rib lath can be laid and concrete poured to form the floor. And while all this is going on, other building

CECO STEEL

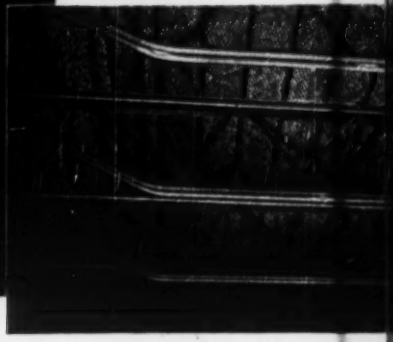
In construction products CECO ENGINEERING

a *Community* **Tomorrow**





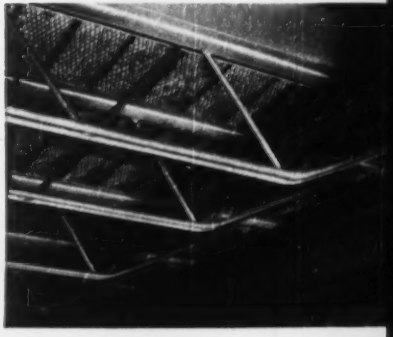
Economical — Ceco Open-Web Steel Joists are self-centering. The form work for the concrete slab—usually metal rib lath or steeltex—rests directly on the steel joists without other support from the underside.



Open-Web Steel Joists

trades can be on the job doing their special work such as installing steel windows, electric wiring, plumbing and heating. So, when speed gets the call, specify CECO OPEN-WEB STEEL JOISTS. They are fabricated to exact size in the factory, come to the job tagged, ready to install... provide low cost fire resistive buildings. Ceco assures you fast service from five plants: Birmingham, Chicago, Houston, New York and Wheeling, W. Va.

Conceals Conduits — Ceco Open-Web Steel Joists provide a ready means of concealing ducts, wiring and piping. Space is saved by direct attachment of ceilings to joists. Time and materials are saved, too.



CECO STEEL PRODUCTS CORPORATION

General Offices: 5601 West 26th Street, Chicago 50, Illinois

Offices, warehouses and fabricating plants in principal cities

makes the big difference

• Is YOUR plant protected against water shortage? Peak load demands on municipal water works with inadequate pumping, or reservoir facilities, can slow down, or stop, manufacturing operations.

To avoid that costly possibility, many plants installed Deming Deep Well Turbine Pumps. The vertical, multi-stage construction of these units make it possible to utilize underground water sources at almost any depth below the surface.

In addition to protection against water shortages, many owners of Deming Deep Well Turbine Pumps report savings up to 60% over high rates of central station water works in their areas.

DEMING
Water Lubricated
TURBINE
PUMPS

For more information on the advantages of Deming Deep Well Turbine Pumps for factory water supply and other uses, write for free Bulletin No. 4700-8.

THE DEMING COMPANY
536 BROADWAY • SALEM, OHIO

READER COMMENT

Federal Aid For Cities

Sir: In your editorial, "Is That Trip — to Washington — Necessary?" (ENR Dec. 22, 1949 p 21) you imply that the members of the American Municipal Association are all out in favor of state and Federal assistance. You further imply that the group seems to feel that the federal government and the states can finance things which the cities themselves cannot take care of. You state that these conclusions were reached at the recent conference of the American Municipal Association "in what is best described as a mass demonstration of the appeal to political expediency."

These statements do not seem to be founded in fact nor on the action of the Conference. As a matter of fact, I am sure that the rank and file of the members of the American Municipal Association have been even more conservative than ENGINEERING NEWS-RECORD in urging municipalities to take care of their own needs. There is nothing in the statement of our organization's National Municipal Policy of 1950 to substantiate the sweeping statement in your editorial.

We realize that municipalities must function primarily on their own resources. There are times, however, when the state governments take so much of the available revenue that municipalities must have part of it back in order to carry out the functions which the states require of them. Highway-user revenues are a good example. Is there any reason why the city motorist should pay state gasoline taxes and registration fees and not receive back for city purposes some of these levies? Is there any reason why the state should not distribute back to some of the localities the necessary funds for equalizing opportunities between school districts? If you do not subscribe to this latter point of view then you have to deny that you favor equal schools for all even within a state, or that you favor a minimum program of education within the state. The request for state financial aid comes about primarily because it seems desirable in the fields of health, welfare and education to provide a minimum program which the state itself prescribes. This can be accomplished only by the collection of funds by the state and the distribution of these funds primarily to the weaker areas.

I feel certain that we do not disagree with you in your basic philosophy in this matter. I think when you have read our National Municipal Policy for 1950 we will be somewhat closer to a common agreement.

CHARLES H. CHATTERS
Executive Director, American Municipal Association, Chicago, Ill.

EDITORS NOTE—Mr. Chatters properly calls attention to the fact that neither the AMA official policy statement nor any resolution passed by the conference go all out for state and federal aid. The policy statement is an unusually constructive one. The editorial in question, however, was not inspired by official AMA policy, but by the general tone of conversation at the meeting—which seemed to be strongly in favor of more federal aid. This, in our opinion, is unsound and "political expediency", and the editorial attempted to emphasize that fact. It was directed at federal aid and not state aid, another matter.

Endorses Toll Road Article

Sir: Your article on Toll Roads, ENR Mar. 30, p. 26, to me definitely accents the important considerations, and certainly cannot be construed as an endorsement of toll roads without proper safeguards. I presume that because of many statements that I or others of our staff have made, it is the general understanding that the Bureau of Public Roads is unwilling to accept the logic of paying additional fees for extra facilities. As I have attempted to make clear before, our objection is not to payment of reasonable additional fees for additional services, but the payment of extra costs of financing and construction that can very easily defeat what could be a sound financial undertaking. I do not feel that the fact that revenue bonds are held not to obligate the faith and credit of the State, and therefore do not require a popular vote, is a good reason to adopt this method of financing.

THOMAS H. MACDONALD
Commissioner of Public Roads
Washington 25, D. C.

Handy Beam Formula

Sir: I have found the following formula, based on the MSC formula, convenient for computing the equivalent S of a beam laterally unsupported:

$$\text{Equiv. } S = \frac{50\,S}{L \times d \over bt}$$

where L is the length in feet.

SAMUEL REUBENE
Consulting Engineer
Pittsburgh, Pa.

BOOK REVIEWS

Contract Law

LEGAL PHASES OF ENGINEERING: CONTRACTS AND SPECIFICATIONS—By Ivan C. Crawford. 346 pp. The Macmillan Co., New York. $3.75.

The primary object of the book is to give engineering students some general knowledge of the fundamental principles of law usually involved in business transactions and to acquaint them with the process employed by courts in arriving at their decisions.

The book discusses in short chapters such phases of the law as the admission of evidence at trials; the organization of businesses both in the form of partnerships and corporations; the making, performance and discharge of contracts; and the law of torts and sales.

The book should also be of interest to practicing engineers as it discusses the various steps taken preliminary to the award of contracts and various types of insurance that should be carried while construction work is being carried on. The appendix sets forth copies of the forms of contract and bonds used on some important jobs, which contain some valuable suggestions that could be incorporated in any construction contract. The book also includes copies of specifications used on several important jobs.—Reviewed by I. Vernon Werbin, Counselor at Law, New York.

Timber Engineering

THE MECHANICAL PROPERTIES OF WOOD—By Frederick F. Wangaard. 376 pp. John Wiley & Sons, New York 16, N. Y. Chapman & Hall, London. $6.

This is an up-to-date version of Garratt's "Mechanical Properties of Wood," published in 1931. It is divided into four parts: basic properties of clear wood, factors affecting the properties of wood, working stresses for structural lumber, and timber testing. Tables give properties for more than 150 American woods and stresses for structural species.

A Seattle Biography

THAT MAN THOMSON—Autobiography of R. H. Thomson. 134 pp. University of Washington Press, Seattle, Wash. $2.75.

One of Seattle's most famous citizens, Reginald H. Thomson, who served as city engineer under seven mayors and was in the forefront of the city's development throughout a long lifetime, looked back over the years at the age of 92 and wrote "That Man Thomson." The book is at once his autobiography and an interesting account of highlights in the city's growth from the time he came there to live in the Eighties.

Thomson not only saw Seattle grow from a population of 3,500 to more than half a million; even in the early days he had the vision to foresee this great growth. He fought vigorously for proper planning and laying the foundation for enormous development. His was the master mind in such projects as an early regrade undertaking that moved almost 2,000,000 cu yd in what is now the center of the city, getting railroads together on a joint tunnel project, and developing a water supply that has been extended to a 161-mgd capacity.

Though Thomson was a popular leader, he also had many enemies because he frequently battled with those he believed to be opposed to the best interests of his community. His life was filled with dramatic incidents and tense situations. Of these he could speak without restraint, at the age of 92, and he did just that in this piece of writing. All who knew him will recognize the style in which this book is done; no other person could have written it.

New Engineering Book

THE COST AND FINANCING OF SOCIAL SECURITY—By Lewis Meriam, Karl T. Schlotterbeck and Mildred Maroney. 193 pp. The Brookings Institution, Washington, D. C. $3.00.

LEGAL PHASES OF ENGINEERING: CONTRACTS & SPECIFICATIONS—By Ivan C. Crawford. 346 pp. The Macmillan Co., New York. $3.75.

FIRE IN BUILDINGS—By Eric L. Bird and Stanley J. Docking. 295 pp. Published by Adams & Charles Black, London; D. Van Nostrand Co., New York. $4.50.

STRUCTURAL FOUNDATIONS—By R. R. Minikin. 359 pp. Published by Crosby Lockwood & Son, London; obtained through Stechert-Hafner, Inc., 31 East 10th St., New York 10. $4.50 plus postage.

PILING FOR FOUNDATIONS—By R. R. Minikin. 196 pp. Published by Crosby Lockwood & Son, London; obtained through Stechert-Hafner, Inc., 31 East 10th St., New York 10. $2.70 plus postage.

THE DESIGN, CONSTRUCTION AND MAINTENANCE OF DOCKS, WHARFS & PIERS—Third Edition. By F. M. Du-Plat-Taylor. 543 pp. Published by Eyre & Spottiswoode, London; obtainable through Stechert-Hafner, Inc., 31 East 10th St., New York 10. Price $15.90 plus postage.

THIRD CONGRESS FINAL REPORT—International Association for Bridge and Structural Engineering, Liege, Belgium. 736 pp. Price 450 F (Belg.).

THE RIGID-FRAME BRIDGE—Third Edition. By Arthur G. Hayden and Maurice Barron. 240 pp. John Wiley & Sons, New York; Chapman & Hall, London. $5.00.

ENGINEERING STRUCTURES: Colston Papers based on a Symposium promoted by the Colston Research Society and the University of Bristol. 260 pp. Butterworths Scientific Publications, London; Academic Press, New York. $4.00.

Reports and Pamphlets

CONSERVATION OF WATER RESOURCES—Black River Regulating District, Watertown, N. Y.

A MECHANICAL DEVICE FOR THE SOLUTION OF EQUATIONS INVOLVING THE LAPLACIAN OPERATOR—Iowa Engineering Experiment Station Bulletin 166. Iowa State College, Ames, Iowa.

PROCEEDINGS OF THE FIRST CALIFORNIA INSTITUTE ON STREET AND HIGHWAY PROBLEMS—Institute of Transportation and Traffic Engineering, University of California, Berkeley, Calif.

NATIONAL STANDARDS FOR CARPENTRY APPRENTICESHIP—Bureau of Apprenticeship, U. S. Dept. of Labor, Wash., D. C.

SEVENTY-FIVE YEARS PROGRESS OF JAPANESE GOVERNMENT RAILWAYS—Ministry of Transportation, Tokyo, Japan.

TODAY AND TOMORROW—An Engineering Analysis of the Highway Transportation System in Mississippi. Report to the Legislative Highway Planning Committee, Jackson, Miss., by the Automotive Safety Foundation, Washington 6, D. C.

OFF-STREET PARKING—Transportation and Communication Dept., Wash., D. C. Price 40¢.

MARKET ANALYSIS OF SHOPPING CENTERS—Technical Bulletin No. 12. Urban Land Institute, 1737 K St., N.W., Wash. 6, D. C.

HOW TO CHOOSE A SCHOOL SITE: GUIDE FOR EVALUATING SCHOOL BUILDINGS: SCHOOL PLANT PROBLEMS IN NEW ENGLAND—Three Bulletins of the New England School Development Council, 13 Kirkland St., Cambridge 38, Mass.

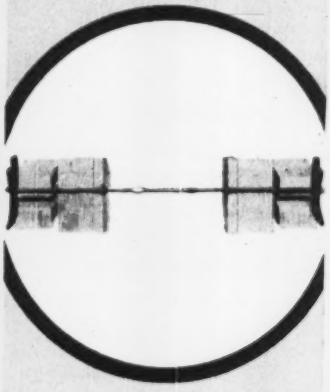
THIRD ANNUAL PROCEEDINGS COUNTY ENGINEERS' CONFERENCE—Iowa State College, Ames, Iowa. Price $1.00.

LIGHTWEIGHT AGGREGATE CONCRETES—Housing and Home Finance Agency, Wash., D. C.

FIRE INSURANCE VALUES AND APPRAISALS UNDER TODAY'S CONDITIONS—Ford, Bacon & Davis, Engineers, 39 Broadway, New York City.

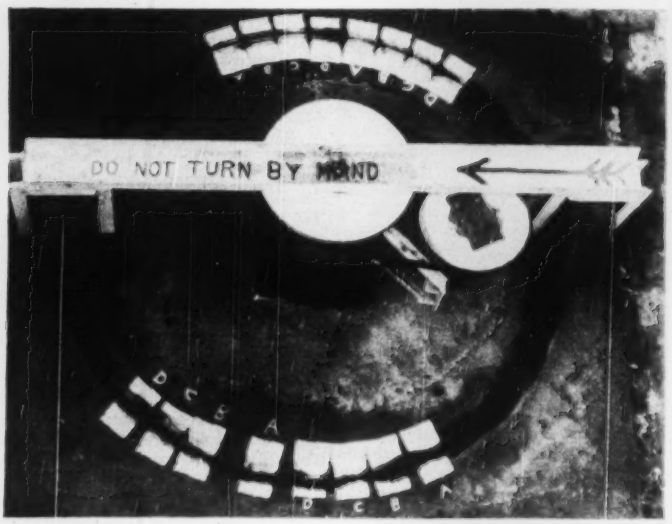
The folks who made the first SNAP-TY* are still first -the name is RICHMOND

*Reg. U.S. Pat. Off. No. 317,560



SEND FOR FREE CATALOG
RICHMOND SCREW ANCHOR CO., INC.
820 Liberty Avenue, Brooklyn 8, N. Y.
NAME
ADDRESS
CITY STATE

FIELD AND OFFICE



LOS ANGELES' BUREAU OF STANDARDS has rigged up a simple device for testing the lasting qualities of road marking paints. Powered by a ½-hp motor, the machine revolves a set of 18-in. (o.d.) tires over paint samples 100,800 times in a 24-hour test period. If samples don't break down or wear off after 100,000 tire passes, city engineers accept the paint for road marking.

Paint tested is first applied to a steel panel by a doctor blade in a .01-in. coat. Panels then are allowed to dry for 18 hours and placed around the circumference of a 4-ft. circle described by the revolving wheels. The tires are leaned outward 2 degrees to make wearage even greater. Each wheel supports 67 lbs. weight. In the picture, the black on samples is rubber worn off from the tires, but paint on some of the panels is also seen to be breaking down.

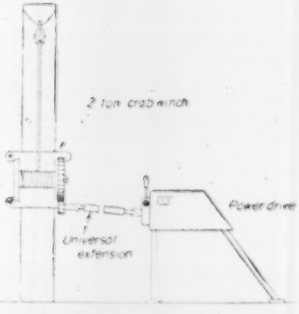
Time Saving on Building Addition

Unorthodox construction procedure saved considerable time for the J. C. Boespflug Construction Co., Seattle, Wash. in building a $200,000 addition to the storage cellar of the Olympia Brewing Co. at Olympia. The storage room needed to be heavily insulated to maintain constant temperatures for stored material.

Normal procedure would see erection of one 2-in. layer of cork before guniting, the final 2-in. layer after guniting. However, after consultation with Trueman L. Schmidt, construction engineer for the brewery, Boespflug erected both layers of cork at the same time, then applied 4 in. of gunite.

The cork was held in place with 2x4 studdings between floors on 2-ft. vertical centers, with shiplap on 12-in. centers to catch the horizontal joints of the cork. Outside scaffolding could thus be used for both layers, and the fumes from the hot asphalt pitch (used to cement the layers together) were dissipated more readily than in an inclosed building.

The plant addition is a steel frame structure, three stores high, and 61x98 ft. in extent.



POWER FOR A CRAB WINCH—Adapting a power drive with a universal arm, or an electric drill (½ HP), to a crab hoist for pulling large cables or making light lifts will speed operations greatly.—Joseph Gamester, Portsmouth, N. H.

MAP of the northern part of Holland, showing the part of the Zuider Zee converted into a fresh water lake, most of which ultimately will be reclaimed for agricultural purposes, in the continuing effort to increase Dutch resources.

Reclamation of the Zuider Zee

Within a few months, with the aid of the local currency account of U. S. Economic Cooperation Administration, the tremendous work of reclaiming land for Holland from the Zuider Zee will be resumed in a new district.

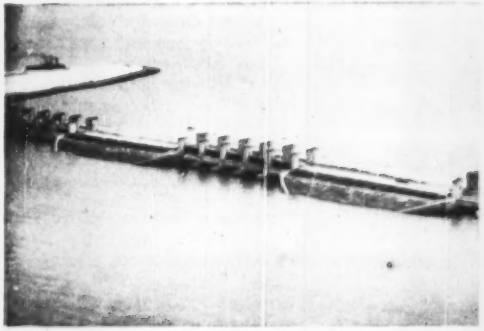
The work will be on the eastern polder, as the Dutch call the land to be reclaimed from the sea. Its location is shown on the accompanying map.

The Zuider Zee is a large but shallow arm of the North Sea. Its average depth is only between 12 and 15 ft. The bottom is mostly clay.

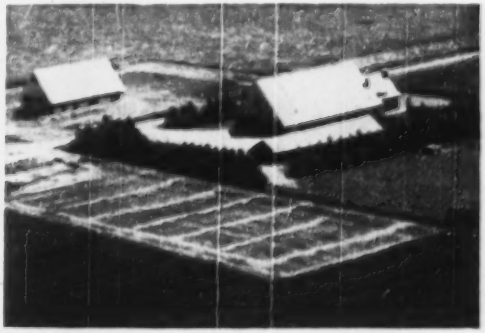
It was in 1918 that plans for the modern reclamation project were first considered by the Netherlands government. These entailed the construction of two enclosing dams and the reclamation of several polders with a total area of 560,000 acres to increase the livable land of the country by seven percent and the arable land by ten percent.

Work began in 1927. However, it was not till 1927 that work on the first part of the plan began. The enclosing dam from the upper part of the province of North Holland to the island of Wieringen (1¼ miles) was easily constructed, as was the much longer dike running south from the outer end of the island to close off the Wieringermeer polder. In 1930 the Wieringermeer polder was reclaimed after 6½ months of pumping. The problem of transforming the heavy-salt-laden land into agricultural soil was solved by making the water-table in the polder several feet lower than the lowest ground level of the mainland, and drawing the fresh water freely from the soil by ditches and land drains. Three villages and many farms were built. Main crops in that reclaimed area are now cereals and seed potatoes.

A 20-mile dyke. Simultaneously, the building of the 20-mile "big dyke" from Wieringen to the Frisian coast had started with the dumping of boulder clay, a glacial deposit. First this was done in the shallower places along the line of the dam. The deep channels were then guarded against the scouring action of the water by sill-dams upon which glacial clay was dumped (ENR Dec. 1, 1932, p. 639). The last gap was closed on May 28, 1932, and The Zuider Zee was trans-



SLUICE GATES in the long dam from Wieringer Island to Friesland that shuts off Yssel Lake from the sea, making it a fresh-water storage lake.



A NEW FARM in the Northeast polder, showing the thrifty buildings, and the rich vegetation now growing on the land which was reclaimed eight years ago.

RAM COSTS DOWN with Ramset Fastening System

Quicker than lightning, the self-contained RAMSET TOOL instantly sets drive pins or threaded studs through steel or wood, into steel, concrete, masonry, other hard materials. Slashes costs and time up to 80% for such fastening jobs. Takes less than a minute from start to finish—faster than you can load and light your pipe! Here's why:

1. **No drilling, chipping, plugging, tapping.**
2. **Insert RAMSET FASTENER into tool, with power charge.**
3. **Place against work spot. Then RAM! The fastener sets, instantly, tightly.**
4. **No make-ready or clean-up work. No muss, no fuss, no dirt.**
5. **Light, compact RAMSET TOOL needs no external power. It's completely self-contained.**
6. **No hauling heavy equipment. RAMSET TOOL can be carried in one hand and used in tight, confined spaces.**
7. **Small first cost, pays for itself quickly—and it's savings and profit from then on!**

Every day, thousands of users prove the value of RAMSET SYSTEM . . . the pioneer in powder-actuated fastening methods. A 15-minute demonstration will prove its cost-reducing, time-saving values. Call your local RAMSET Specialist or use coupon for complete details.

STEMCO CORPORATION

12117 Berea Road • Cleveland 11, Ohio

ASK FOR DEMONSTRATION AND DETAILS!

Stemco Corporation, 12117 Berea Road, Cleveland 11, Ohio EN

Please send further information on cost-cutting, time-saving value of RAMSET FASTENING SYSTEM.

Name _____ Title _____

Company _____

Kind of business _____

Address _____

formed into a fresh water lake—the "Ysselmeer."

Before the creation of this lake the chlorine content of the water in the surrounding dairy and farming lands was increasing steadily. Now it has decreased and the yield from the land has greatly improved.

The North East polder of 118,600 acres was reclaimed between 1937 and 1942, partly under the handicaps of the German occupation. Cultivation started there in 1947 and some very modern farms have been established, all equipped with the latest machinery.

HOLLAND AGAINST THE SEA

For a thousand years, Holland has battled the sea. One-fourth of its land area is below the level of the ocean whose encroachment is kept back by 1,500 miles of laboriously built dykes.

At times, the dykes have been breeched to keep enemies out, and at others they have been destroyed by enemies wanting to hurt the Dutch.

Reclamation has added 900 sq. mi. to Holland's arable land, but the shallow Zuider Zee still covers 1,300 sq. mi. of potentially valuable land.

Now, with peace and modern construction equipment, many more square miles of good land soon will be added to the agricultural resources of the thrifty Netherlands.

Wonderful soil—When reclamation work starts soon on the Eastern polder about 3,000 workers will be employed. There will be more mechanization than previously. The enclosing dyke, with a length of 53 miles, is expected to be completed within 6 years, and in 1957 the first farmers will start cultivating the new land which may be the best soil in the entire country.

At the westernmost point of this polder is to be the site of Flevostad, the capital of Holland's twelfth province. The Northeast and Eastern polders will be connected by a bridge over the Yssel estuary.

Later, the Southern and Western polders will be reclaimed, adding much valuable land in the neighborhood of the famous Isle of Marken and the picturesque town of Volendam.

Model City—President Miguel Aleman of Mexico has asked the National Properties Ministry to plan and cost-budget the construction of a model city to replace Suchiate, Chiapas state, on the Guatemalan border, which was largely destroyed by a tornado last fall. Costs are estimated at about $12,000,000.

MUNICIPAL AFFAIRS

ST. GEORGE FERRY TERMINAL—Most of the work is now completed on the new Staten Island ferry terminal at St. George across the Upper N. Y. Bay from Manhattan and Brooklyn. The $21,000,000 project is to be ready for use late this summer. The old ferry terminal, the site of which appears at the left, was burned down in June of 1946. The new structure is designed to handle 70,000 persons daily, coming by ferry, buses and trains. It will also take care of 7,000 vehicles a day. Edward F. Cavanagh, Jr., Commissioner of Marine and Aviation, and Cornelius A. Hall, President of the Borough of Richmond (Staten Island) have joint charge of the project.—Wide World photo.

Very large apartments going up in Philadelphia

The planning and construction of very large apartment buildings in Philadelphia, Pa., continues.

Ground has been broken for a $45,000,000 apartment and commercial center project to be built on the grounds of the Philadelphia Country Club. The owner and developer, the Country Club Estates, Inc., H. M. Watkins, president, has awarded a contract to the Turner Construction Co. for the first phase. It will consist of three apartment buildings and a 500-car garage, to cost more than $11,000,000. The erection of seven 11-story apartment buildings is planned. The shopping center would have parking areas for 3,500 cars. A $7,000,000 mortgage loan has been granted by the N. Y. Life Insurance Co. Sweet and Schwartz are architects, Marvine Blum, associate.

A 34-story, $12,000,000 apartment house is to be erected on the site of the Sheraton Hotel, 9th and Walnut streets, in the Rittenhouse Square section. Matthew K. Stevens says the first floor will be occupied by shops with complete parking facilities within the building. The next four floors will be a garage for 520 cars. The remaining floors will have 912 apartment units, with 2,680 rooms.

The City Planning Commission has asked the zoning board not to act on further applications for such construction until it has conferred with the commission, which insists on adherence to its regulations as to height and setbacks.

Municipal Briefs

City planning committee—An 11-member city planning committee has been appointed in Wilmington, Del., by Mayor James F. Hearn. Members include Edwin F. Koester, chief engineer, George Pope, architect, and John E. Healy II, representing the construction industry.

Public housing—The city council of Chicago, has approved two of seven sites submitted for public housing by the Chicago Housing Authority. The two locations will accommodate 2,655 dwellings. Approximately 10,000 housing units were to be built on the seven sites as the start of the program to construct 40,000 low-rental apartments under the Housing Act of 1949. A council subcommittee now is studying additional sites.

Toronto annexations—Hearings are to be held by the Ontario Municipal Board on a proposition for the amalgamation of 13 suburban communities with Toronto, Ont.

"BETTER MEASURE with LUFKIN"

SMASH HITS!

NEW! NEW! LUFKIN MEZURALL and WIZARD JR. TAPE-RULES with CHROME-CLAD BLADES

Now you can get a famous *Lufkin Mezurall* or *Wizard, Jr.* steel Tape-Rule with *Chrome-Clad* non-glare blades . . . the most outstanding development in years! Get longer tape-rule life . . . more accurate measurement . . . a "better buy" in every way with either of these two *Newest of All Tape Rules!*

CHECK THESE OUTSTANDING FEATURES:

1—Exclusive *Lufkin Chrome-Clad* satin finish blades.
2—Black markings stand out sharply against the chrome white background . . . and they are *durable*.
3—Rust and corrosion resistant.
4—Will not crack, chip, or peel.
5—Self-adjusting hook permits accurate butt-end and hook-over measuring.
6—Replaceable blades.
7—Smooth manual blade operation.
8—Improved heavily plated case—inset side plates in attractive red and white.

DIAGRAMMATIC CROSS-SECTION VIEW

1. Hardened Steel Tape.
2. Rust-resist. ant Coating.
3. Multiple Coats of Elec. troplating.
4. Hard, Smooth, Non-glare Chrome-plating.
5. Black Markings Bonded to Steel. Sunk below Surface.

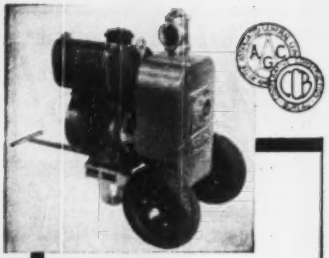
Get more accurate measuring—cut your tape-rule costs—specify the NEW LUFKIN MEZURALL and WIZARD, JR. on your next order for supplies!

Buy LUFKIN

TAPES • RULES • PRECISION TOOLS

THE LUFKIN RULE CO. 75-H

SAGINAW, MICH. • NEW YORK CITY • BARRIE, ONT.



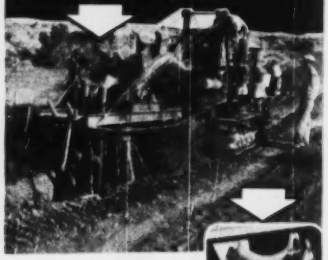
NEW! a modern line of self priming-centrifugal CONTRACTORS PUMPS by McGOWAN

Here's the pump with high capacity at low operation speed for longer engine life. All-welded construction for lighter, stronger, more durable unit. Automatic priming — no moving parts or jets. Improved non-clogging impeller of special iron alloy. Hardened wear plate, for longer life. Fewer moving parts—hence less wear and lower maintenance cost. Large access plates—making inspection and repairs easier. Fully tested and trouble-free shaft seal.

All McGowan Pumps comply with contractors pump standards as adopted by the AGC. New Units—Rental Units. Repair Parts carried in stock by nation-wide dealers.

LEYMAN MANUFACTURING CORP., CINCINNATI 2, O.

Extra Profits ON THE PIPE-STRIPPING JOBS



WITH CLEVELAND STRIPPING BUCKETS

- EXPOSE MORE OF THE PIPE
- REDUCE PIPE SPOILAGE IN TAKE-UP
- FOLLOW THE LINE MORE ACCURATELY
- ELIMINATE TOOTH DAMAGE TO PIPE

For details write direct or see your distributor

THE CLEVELAND TRENCHER CO.
20100 ST CLAIR AVE • CLEVELAND 17, OHIO

MEN AND JOBS

H. H. Hitchcock, civil engineer graduate of Syracuse University, was recently made a civil engineer in the Bureau of Building Inspection of San Francisco, Calif. As assistant civil engineer in the city's bureau of engineering, he was one of the structural designers of the Broadway tunnel and the North Point sewage treatment plant.

Ralph A. Hoot, Fort Wayne, Ind., has been appointed superintendent of sewage treatment plants for Philadelphia, Pa. While superintendent of the Fort Wayne sewage treatment plant, he placed first in a nationwide civil service examination. He is a graduate of the University of Michigan. He was appointed by Philadelphia in preparation for the opening of the new northeast sewage treatment plant, to go into operation this summer. His successor is **Paul Brunner.**

Two civil engineers retired from Government service are **Herbert S. Lewis,** editor of topographic maps, U. S. Geological Survey, and **Lawrence G. Parker,** structural engineer, General Services Administration. Lewis began work in 1900 as a civil engineer with the District of Columbia sewer department, after graduation from Lehigh University. Within two years he passed a civil service exam as topographic draftsman, and was assigned to make editors' corrections on maps. He has worked on maps ever since, and became chief of the manuscript inspection unit, which does final editing of all maps produced by the topographic division. Parker took his degree in civil engineering at the University of Illinois in 1902 and went into private practice. He was associated with structural design of a number of buildings in Chicago, including the Morrison, Drake and Edgewater Beach hotels, Civil Opera Building and Marshall Field Office Building. Entering federal service in 1934, he continued structural design work, but was diverted to U. S. Coast Guard shore facilities during the war.

Andrew F. Moursund, district engineer for the Texas Highway Department at San Angelo, is retiring after 28 years service. **Tom J. Kelly,** engineer for the Pecos district, was named by State Highway Engineer Dewitt C. Greer to replace Moursund. **Leslie D. Cabaniss,** now assistant engineer at Paris, will get the Pecos job.

Clifford J. Geertz has been appointed assistant city engineer of San Francisco, Calif., to succeed **Sherman P. Duckel,** recently made director of public works. Mr. Geertz, who received his civil engineering education at the University of California, has been in the city engineer's office since 1925 except during the war when he was a captain in the Corps of Engineers. Most recently he has been in charge of estimating costs for contracts.

Wm. H. Bruder has been appointed principal engineer in the public works department of White Plains, N. Y. He is a civil engineer graduate of Rensselaer Polytechnic Institute, 1934, and was in the public works department of Bronxville, N. Y., for 13 years and was also with the N. Y. Central R.R. and the Westchester Lighting Co.

H. E. Palmer, Hastings, Minn., has been presented with the Minneapolis "Star and Tribune" award for leadership in the state in recognition of his work in the Minnesota Federation of Engineering Societies, of which he is president.

On April 15, John E. Wiley, public relations engineer and secretary to the Wyoming Highway Commission, will join the staff of the American Association of State Highway Officials in Washington as assistant to Hal H. Hale, executive secretary. Mr. Wiley has a long background in the highway field. From 1942-1946 he served in the Engineer Corps, U. S. Army. His last Army assignment was assistant chief of staff, G-5, 102d Infantry Division, ETO, in Berlin. He retired as a major in October, 1944. Recently he was elected president of the Wyoming Section of the ASCE. He received his engineering training at the University of North Dakota.

MAN HUNT!

Business and industry are searching, desperately, for men qualified to fill executive positions!

Surveys prove there is an acute shortage of managerial talent. The average age of top-level men is already dangerously high; replacements are needed urgently.

The next few years will be years of *great opportunity* for alert men backed with a thorough knowledge of business fundamentals. The need is for men who know all four major departments of business—Accounting, Finance, Marketing and Production; not narrow specialists. But *executives* who can direct the activities of others.

The Institute Can Help If you are ambitious and have a measure of native ability, the Alexander Hamilton Institute can help you prepare for an executive position in a relatively short time.

The Institute offers you a practical, concentrated means of obtaining the training you must have in your spare time. It stimulates your desire to forge ahead, and awakens hidden abilities. It shows you, by actual examples, the methods and procedures followed by management.

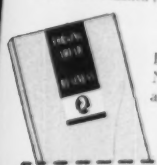
To the man who seeks a sound and realistic program to speed-up his progress in business, the Institute's Modern Business Course and Service is ideal. Ideal because it fits the new concept of management, prepares men to handle the larger opportunities of business.

Send for Free Booklet So far as it has been possible to do so, the Institute's executive-training plan has been outlined and described in a 64-page book titled "Forging Ahead in Business."

There is no charge for this book because it is worth only what you make it worth. Some glance through it and toss it aside unread. Others have found a fortune in its pages.

"Forging Ahead in Business" is a serious book about a serious subject. As such, it holds nothing for the immature or the merely curious. It is meant only for ambitious, determined men who are looking ahead and who want to move ahead.

If you feel that "Forging Ahead in Business" is intended for you, fill out and send in the coupon below today. Your copy will be mailed to you promptly.



ALEXANDER HAMILTON INSTITUTE INC.
Dept. 721, 71 West 23rd Street, New York 10, New York. In Canada: 54 Wellington Street, West, Toronto 1, Ont.

ALEXANDER HAMILTON INSTITUTE INC.
Dept. 721, 71 West 23rd Street, New York 10, N.Y.
In Canada: 54 Wellington St., W., Toronto 1, Ont.

Please mail me, without cost, a copy of the 64-page book "Forging Ahead in Business."

Name.....

Firm Name.....

Business Address.....

Position.....

Home Address.....

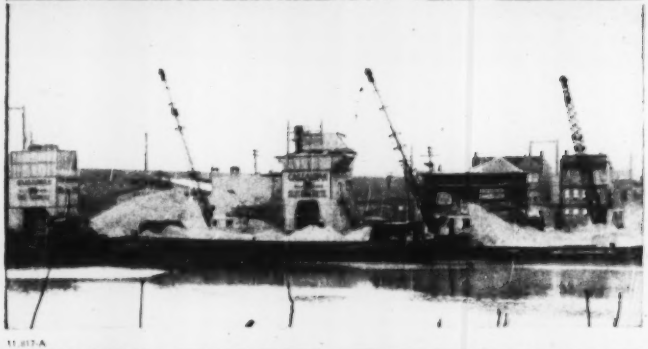
J. P. CALLAGHAN CO. Ready-Mixed Concrete Plant

Meets High-Capacity Schedules with 3 LINK-BELT SPEEDERS

Delivering ready-mixed concrete promptly to 450 customers means high-capacity schedules for J. P. Callaghan Company, in Harrison, New Jersey. And those high-capacity schedules depend on machines that bring plenty of power to the job—and can be depended on to stay on the job. That's why the Callaghan Company uses Link-Belt Speeders.

Two K-365's and one K-360 move 3,000 yards of sand and gravel a day from barges and storage piles to two batch houses and a truck-loading hopper. In continuous use for 1, 5 and 7 years, these machines have never been out of service because of breakdowns.

It's this kind of on-the-job performance that has made every Link-Belt Speeder a sure sign of an efficient operation. Every machine in the line is power-packed for high capacity, and precision-built for minimum maintenance. Find out today how Link-Belt Speeder can increase your own materials handling efficiency—see your nearby distributor.



11,617-A

LINK-BELT SPEEDER

LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA

Builders of the Most Complete Line of SHOVELS-CRANES-DRAGLINES

Be sure to see the

NEW HC-51

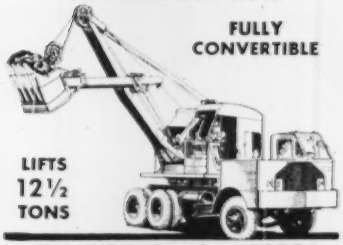
TRUCK-MOUNTED HALF-YARD SHOVEL-CRANE

WITH

SPEED-o-MATIC

HYDRAULIC CONTROLS

FULLY CONVERTIBLE



LIFTS 12½ TONS

Send for Catalog 2322

EDUCATION and RESEARCH

Taking phosphorus out of sewage effluent

Development of a pilot plant, which has demonstrated considerable success in taking phosphorus out of sewage effluent, has just been announced by Profs. W. L. Lea and G. A. Rohlich of the University of Wisconsin's department of civil engineering.

The Lea-Rohlich "flocculation process" of phosphorus removal is based on the addition of about 200 ppm of alum to a batch of sewage effluent. After alum and effluent are mixed for about 15 min, a sludge is formed which sinks to the bottom of the tank carrying phosphorus and alum with it. Liquid effluent is then piped off to a stream and the phosphorus-alum sludge stays in the tank. The process was found to work best when the acidity rating—pH—of the sewage was about 7.5.

This process worked fine in the laboratory but Lea and Rohlich knew it wasn't feasible for full-scale use. The reasons: The alum is too expensive to pour in every day; and accumulated sludge presented a serious disposal problem. So they went to work on a system for recovering alum and refining the phosphorus sludge. Here's how it works:

The alum-phosphorus sludge goes to a reaction chamber where sodium hydroxide is added to raise alkalinity. This brings alum and phosphorus into solution, which is piped to another tank. In it calcium chloride is added and a chemical reaction causes phosphorus to settle out as calcium phosphate. Sodium aluminate is drawn off in solution.

This process results in the recovery of about 93% of the alum, which can be re-used. The calcium phosphate is said to be ideal for agricultural fertilizer.

Large scale application of the discovery would mean that sewage effluent would no longer contaminate lakes and streams with surplus phosphorus, one of the elements held responsible for nuisance growth of algae; sewage phosphorus could be refined and sold as commercial fertilizer; and atomic-researchers would no longer have to worry about danger from radio-active phosphorus in wastes.

The process also is reported to cut down organic nitrogen by 60% and biochemical oxygen demand by 85%. These are two other factors which help cause excessive algae growth in waters receiving sewage effluent.

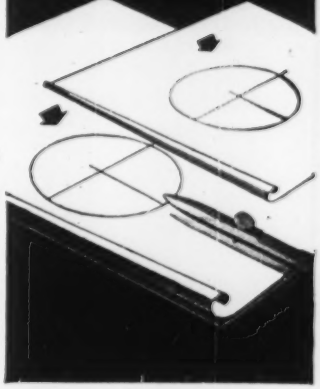
Working experimentally in the university hydraulic laboratory at the Nine Springs treatment plant of the Madison metropolitan sewage district —where sewage pH was about 7.5— these engineers have been able to remove 99% of the phosphorus from the effluent. They estimate that they could get about a ton of soluble phosphorus fertilizer a day out of the 15 mgd of sewage being processed at that plant.

They have been working on the project for two years under grants from the university's lake investigations committee and the National Institute of Health.

Advanced research—Harvard University has started a drive to raise a $1,300,000 fund for the Harvard Foundation for Advanced Study and Research. Ralph Lowell, president of the Boston Safe Deposit and Trust Co., is chairman of the drive committee. The foundation, established a year ago, federates the interests of the Graduate School of Arts and Sciences, including the Division of Engineering Sciences, and the Graduate Schools of Design, Education and Public Administration. Immediate objective is to finance a $1,000,000 graduate student center building.

STANFORD RESEARCHER—Frederick G. Sawyer has joined the staff of the Stanford Research Institute, Stanford, Calif., to administer the institute's air and water pollution research program. He got his bachelor's, master's and Ph.D. degrees from the Polytechnic Institute of Brooklyn, N. Y. In the fall of 1946, Dr. Sawyer went to Washington, D. C., and spent seven months with the research and development division of the War Department General Staff.

Tracing cloth that defies time



● The renown of Imperial as the finest in Tracing Cloth goes back well over half a century. Draftsmen all over the world prefer it for the uniformity of its high transparency and ink-taking surface and the superb quality of its cloth foundation.

Imperial takes erasures readily, without damage. It gives sharp contrasting prints of even the finest lines. Drawings made on Imperial over fifty years ago are still as good as ever, neither brittle nor opaque.

If you like a duller surface, for clear, hard pencil lines, try Imperial Pencil Tracing Cloth. It is good for ink as well.

IMPERIAL TRACING CLOTH

SOLD BY LEADING STATIONERY AND DRAWING MATERIAL DEALERS EVERYWHERE

PAYING FOR THINGS IS SO

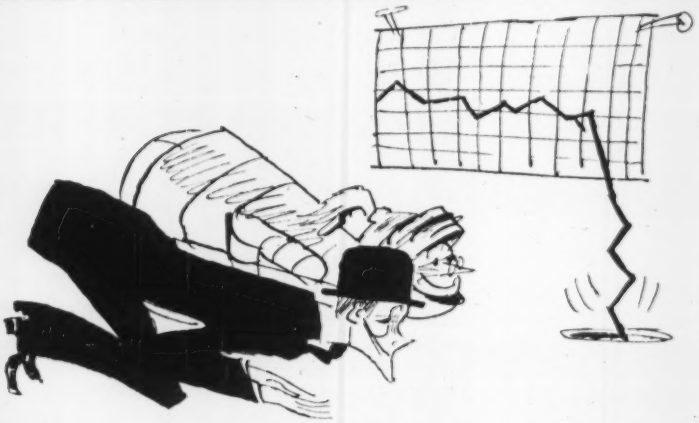
(a sympathetic ad)

1

Because businessmen like protection...

2

But hate paying for it...



5

50% below the average rate in some cases!

AMERICAN MUTUAL... *the first American liability insurance company*

© 1953 AMERICAN MUTUAL LIABILITY INSURANCE COMPANY

ANNOYING! BY MR. FRIENDLY

(3) We've helped 'em eliminate accident hazards . . .

(4) Which cut their insurance costs as much as . . .

Look at these savings and look us up!

Here are a few of many cases where we've helped companies to reduce premiums to below average for their field!

A KANSAS IRON WORKS: ***From 24.5% above average to 14.0% below, in 4 years.***

A MASSACHUSETTS MFR.: ***From 26.2% above to 6.9% below in 1 year.***

AN ALABAMA CONTRACTOR: ***From 24.3% above to 6.8% below in 1 year.***

We saved a large Iron works almost half a million dollars through dividends alone in 20 years. And another company over $400,000.00 in 27 years. If you're interested in savings, that's our middle name!

MAIL THIS COUPON NOW—WITHOUT DELAY!

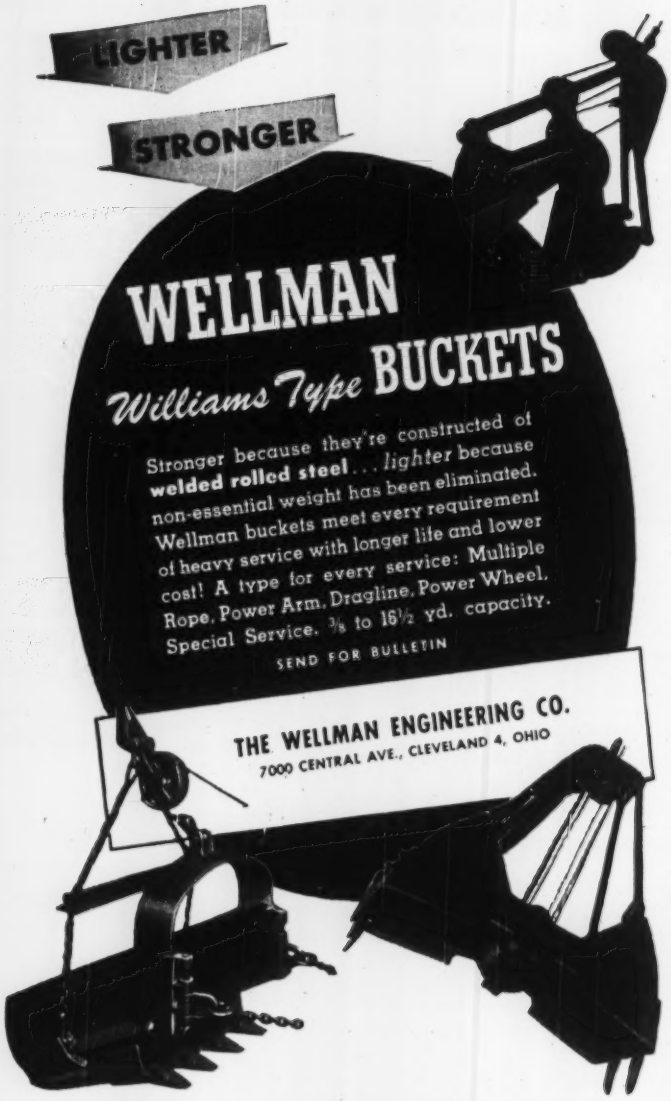
Dept. O-93, American Mutual Liability Insurance Company
142 Berkeley Street, Boston 16, Massachusetts

Without obligation, please *rush* to me information on *The All-American Plan* so that I may be richer and happier!

Name _____

Street _____

City _____ *State* _____


LIGHTER
STRONGER
WELLMAN
Williams Type BUCKETS
Stronger because they're constructed of welded rolled steel... lighter because non-essential weight has been eliminated. Wellman buckets meet every requirement of heavy service with longer life and lower cost! A type for every service: Multiple Rope, Power Arm, Dragline, Power Wheel, Special Service. 3/8 to 16½ yd. capacity.
SEND FOR BULLETIN
THE WELLMAN ENGINEERING CO.
7000 CENTRAL AVE., CLEVELAND 4, OHIO

DRILLING CONTRACTORS

DIAMOND AND SHOT CORE BORINGS—DRY SAMPLE BORINGS

Foundation Testing for Bridges, Dams and All Heavy Structures

Also

Manufacturers of Diamond and Shot Core Drills, Accessories and Equipment

SPRAGUE & HENWOOD, Inc.

Scranton, Pa. Dept. E, U. S. A.

"GUNITE" CONCRETE

(Since 1913)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING

GUNITE CONCRETE & CONST. CO.

1301 Woodswether Rd., Kansas City 6, Mo.

District Branch Offices

R. N. Turner, Dist. Mgr., 228 No. LaSalle St., Chicago 1, Ill.; B. H. Mueller, Dist. Mgr., 6625 Delmar Blvd., University City, (St. Louis), Mo.; Philip D. Barnard, Dist. Mgr., 2036 Addison, Houston 5, Tex.

Branch Offices: Denver, Dallas, New Orleans

See our catalog in Sweet's

ELECTIONS AND ACTIVITIES

H. F. Jones of Raleigh has been elected president of the North Carolina Society of Engineers, succeeding T. C. Heyward of Charlotte. Other officers: Ross H. Reynolds of Raleigh, vice-president; Leroy M. Keever of Raleigh, re-elected secretary-treasurer; and O. B. Packard of Wilmington, J. Norman Pease of Charlotte, W. H. Rogers, Jr., of Raleigh, and Carroll L. Mann, Jr., of Greensboro, directors.

The Builders Association of Niagara Falls, N. Y., has elected John C. Bullock president. Other officers, Bruno K. Scrufari, vice-president; Edwin C. Woolcock, treasurer; Gaylord Guenther, Howard Einsfield, and Jack Johnson, directors.

Officers for the Idaho Society of Engineers for 1950 are A. S. Janssen, president; H. R. Flint, vice-president; James L. Morris, secretary, and Archie Biladeau, treasurer. Orlando C. Mayer, Boise, retiring president, was elected a director of the National Association of Professional Engineers.

Officers of the Lehigh Valley section, ASCE, are: President, Wm. J. Eney; vice-presidents, M. O. Fuller and R. J. McIntosh; and secretary-treasurer, R. E. Crispin. Mr. Eney is head of the department of civil engineering at Lehigh University.

Hanford Thayer, planning engineer for the Corps of Engineers, has been elected president of the Seattle, Wash., Post, Society of American Military Engineers. Serving with him are Lt. Col. Paul H. Symbol, first vice-president; Walter A. Averill, second vice-president; Capt. Hazel A. Graham, secretary; Woodbury Abbey, treasurer; Walter H. Starkweather, delegate at large; and Major Harold G. Brown, national director.

The Minnesota Federation of Engineering Societies has elected these officers: President, J. L. Wilson; First vice-president, N. T. Rykken; second vice-president, Howard Cobb; third vice-president, Gordon Moore; secretary-treasurer, E. A. Goetz. At the same time the Minnesota Surveyors and Engineers Society elected; President, Victor Benson; vice-president, John Swanberg; secretary-treasurer, S. S. Watkins—The Minnesota Association of Professional Engineers

(Continued on page 61)

All Electric Drive... Only 2 Main Units

NEW *Continuflo* ASPHALT PLANT

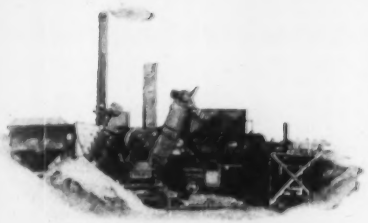
Here's a brand new asphalt plant packed with ideas to save you money.

Maintenance is lower because individual electric motors drive all components, eliminating numerous chains, sprockets and other wearing parts.

Easier to move because it consists of only two main units mounted on pneumatic tired chassis. The drier, burner and dust collector on one . . . the gradation screen, material bin and mixer on a second.

Easier to set up because no digging is required—no special aligning is necessary.

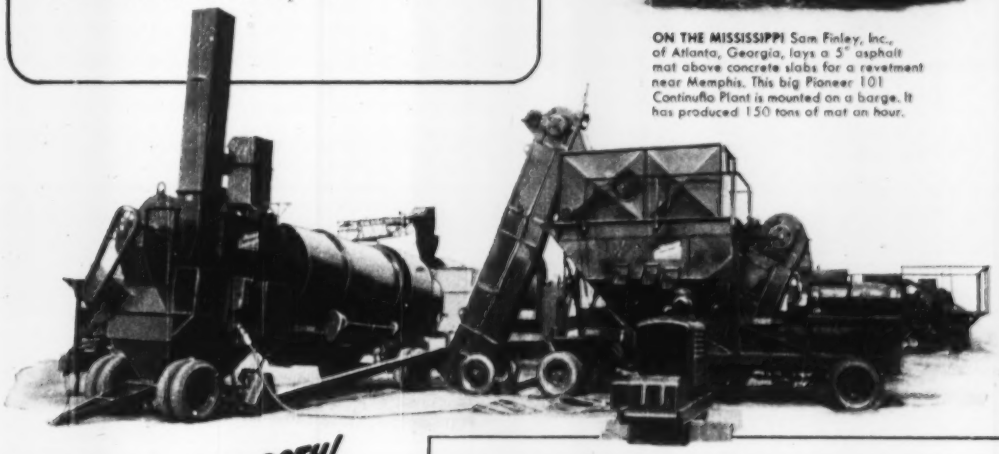
This new continuous process plant incorporates the ideas of over 500 asphalt engineers and contractors. Two years ago they told us what they wanted. Last year we built only two plants so they could be thoroughly field-tested. Today this new Pioneer *Continuflo* Plant stands head and shoulders above any other in the field. Want complete details? Mail the coupon below.



OTTUMWA, IOWA. Blunk Construction Company produces a continuous flow of blacktop with their new Pioneer 51 Asphalt Plant. "Atomized air" permits use of less expensive fuel.

HOBBS, NEW MEXICO. Wylie Brothers prepare road mix from caliche deposits with their Pioneer 51. All mixing operations are fully automatic . . . correct mix assured.

ON THE MISSISSIPPI Sam Finley, Inc., of Atlanta, Georgia, lays a 5" asphalt mat above concrete slabs for a revetment near Memphis. This big Pioneer 101 Continuflo Plant is mounted on a barge. It has produced 150 tons of mat an hour.



BUY BOTH!

Higher Output, Lower Upkeep!

Pioneer

Continuflo EQUIPMENT

MAIL COUPON TODAY!

Pioneer Engineering Works

1515 Central Avenue • Minneapolis 13, Minnesota

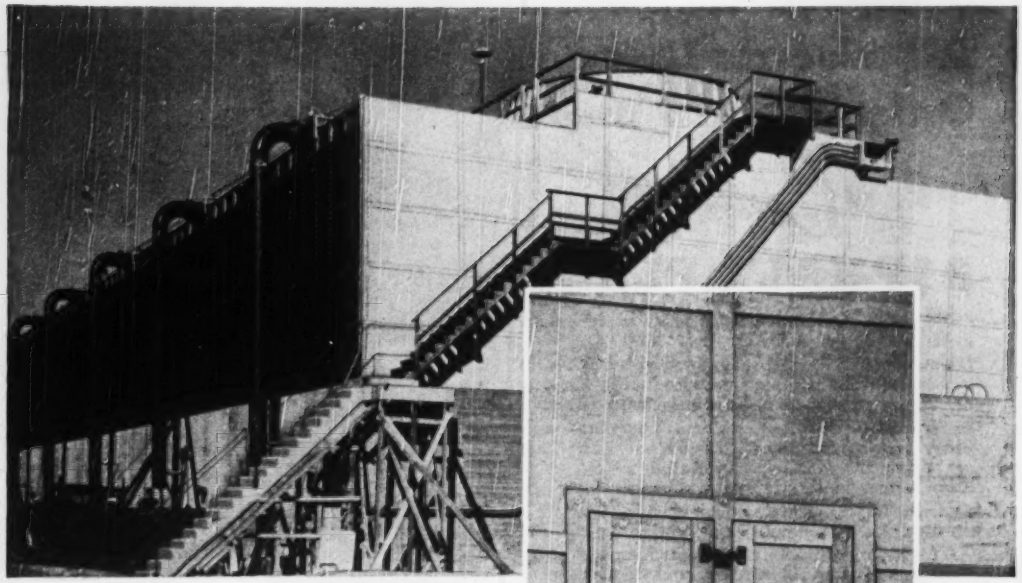
● Please send information on Pioneer *Continuflo* Asphalt Plants.

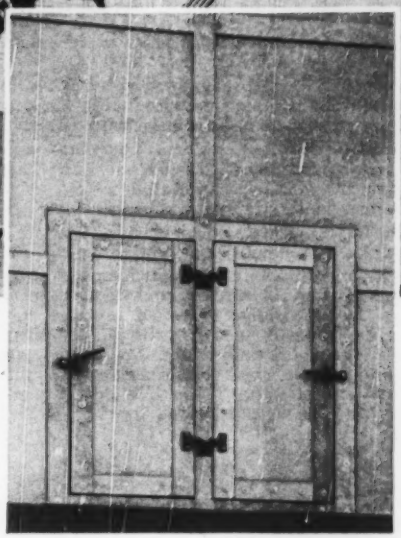
Name _____

Company _____

Address _____

City _____ *State* _____





TWO-FISTED
K&M *"Century"* APAC
LICKS DOUBLE THREAT

"Century" ¼" thick APAC ASBESTOS-CEMENT SHEETS were used on this cooling tower at the Mustang Plant of the Oklahoma Gas and Electric Co. Constructed by Marley Co., Inc., Kansas City, Kansas.

Cooling tower temperatures on one side, plus Oklahoma weather on the other, don't bother the K&M APAC Asbestos-Cement Sheets on this job. Always, on any flat surfaces—large or small—outside or inside—K&M APAC is good for years of strictest economy.

APAC sections are large and strong, so that application is simple and quick. Thus erection time and labor costs are sharply reduced. Then comes lasting resistance to every changing season; to fire, rust, rot, rodents and termites. You couldn't have stronger assurance of minimum maintenance. You won't even need painting to preserve the neat, tough APAC surfaces.

For name of your nearest distributor, and all particulars, write to us.

K&M APAC suits your needs...

Use it for any flat panels, partitions, sheathing, shaft casings, bins.

Cut it easily to any needed sizes, right on the job.

Apply it over steel or wood girts, wood studs, solid wood sheathing, insulation board.

APAC Standard Sheet Size: 4' x 8'. Standard Thicknesses: 3/16", ¼", 3/8".

Nature made Asbestos...
Keasbey & Mattison has made it serve mankind since 1873.

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

elected: President, Gordon Bodien; President-elect, Paul R. Spear; Vice-president, J. J. Ryan; Secretary, E. S. Ward; Treasurer, W. W. Fryhofer.

Aime Cousineau, civil engineer and director of the City Planning Bureau of Montreal, has been elected president of the Canadian Institute of Town Planners.

The 102nd annual meeting of the Boston, Mass., Society of Civil Engineers, the oldest engineering society in the country, with a membership of 850, was held March 15. New officers elected are: President, Thomas T. Camp, partner, Camp, Dresser & McKee, consulting engineers; vice-president, Emil A. Gramstorff, professor and head of department of civil engineering, Northeastern University; secretary, Robert W. Moir, associate civil engineer, Metropolitan District Commission; Treasurer, Herman G. Dresser, partner, Camp, Dresser & McKee, consulting engineers; directors, William L. Hyland, partner, Fay, Spofford & Thorndike, consulting engineers; Allen J. Burdoin, senior engineer, Metcalf & Eddy, consulting engineers.

MAJOR MEETINGS

Illinois Section, American Water Works Association, La Salle Hotel, Chicago, Ill., April 12-14.

New Jersey Society of Professional Engineers, Essex House, Newark, N. J., April 14-15.

Highway Transportation Congress, Mayflower Hotel, Washington, D. C., April 25-27.

Indiana Section, American Water Works Association, Purdue University, Lafayette, Ind., April 26-28.

American Society of Civil Engineers, spring meeting, Los Angeles, Calif., April 26-29.

Maryland-Delaware Water and Sewerage Association, Fort Cumberland Hotel, Cumberland, Md., April 27-28.

Third Inter-American Congress of Municipalities, New Orleans, La., May 2-5.

N. Y. State Society of Professional Engineers, Hotel Statler, New York City, May 4-6.

Pacific Northwest Conference, ASCE, Winthrop Hotel, Tacoma, Wash., May 5-6.

American Society of Civil Engineers, Pacific Northwest Conference, Winthrop Hotel, Tacoma, Wash., May 5-6.

Producers' Council, spring meeting, Washington, D. C., May 9-10.

U. S. Conference of Mayors, Waldorf-Astoria Hotel, New York City, May 11-13.

Florida Highway Conference, University of Florida, Gainesville, Fla., May 11-23.

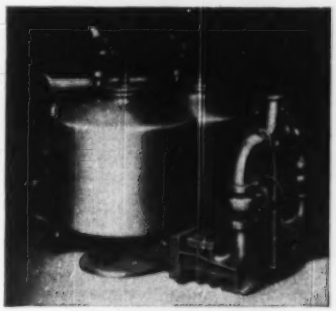
American Water Works Association, annual conference, Convention Hall, Philadelphia, Pa., May 21-26.

Society for Experimental Stress Analysis, spring meeting, Hotel Statler, Cleveland, Ohio, May 25-27.

Good reasons why they are your best buy
FOR EVERY MUNICIPAL INSTALLATION

SHONE® PNEUMATIC EJECTORS

• IN SEWAGE LIFT STATIONS • IN SUBWAYS • IN MUNICIPAL SEWAGE TREATMENT PLANTS



√ no wet well
√ no noxious fumes or odors
√ no danger of explosion
√ no screens or shredders -- no repulsive cleaning job

For 75 years, in hundreds of municipal installations around the world, Shone Pneumatic Ejectors have been a symbol of utter dependability.

You may have heard the amazing story of the Shone Ejector sealed in its pit for more than 20 years—never inspected because it was not listed among mechanical equipment; rediscovered when alteration work opened the pit—operating as rhythmically and quietly as the day it was installed.

These far-sighted communities wanted the best, chose Shone Ejectors for recent installations:

Daytona Beach, Fla. (6)
Los Angeles, Calif., Hyperion Treatment Plant (2)
Campus, University of Washington, Seattle (2)
Chicago, Ill., West Side Subway Extension (22)
Osceola, Iowa
Mt. Clemens, Mich.
Freeport, L. I., New York (6)
Port Washington, L. I., New York (2)
Moorehead, Minn., Treatment Plant (6)
Anacostia Treatment Plant, Washington, D. C.

A few of hundreds of older Shones operating as efficiently and dependably as ever:

Long Beach, Calif.	Brighton, Mich.	Rochester, N. Y.
Ft. Lauderdale, Fla.	Detroit, Mich.	Berea, O.
Pensacola, Fla.	Flint, Mich.	Dayton, O.
Silver Springs, Fla.	Pontiac, Mich.	Enid, Okla.
Dublin, Ga.	Royal Oak, Mich.	Tulsa, Okla.
LaPorte, Ind.	Tawas City, Mich.	Providence, R. I.
Warsaw, Ind.	Faribault, Minn.	Memphis, Tenn.
Cedar Rapids, Ia.	Winona, Minn.	Austin, Tex.
Davenport, Ia.	Brookhaven, Miss.	Dallas, Tex.
Sioux City, Ia.	Butler, Mo.	Madison, Wis.
Hays, Kans.	Rolla, Mo.	Milwaukee, Wis.
Salina, Kans.	Bloomfield, Nebr.	Neenah, Wis.
Winnsboro, La.	Manchester, N. H.	Laramie, Wyo.
Aberdeen, Md.	Auburn, N. Y.	
Baltimore, Md.	Olean, N. Y.	

MINIMUM MAINTENANCE

Shone Ejectors require **no attention.** They can be operated from distant compressors — and several can be operated from a single compressor plant.

•

Write for Bulletin 4004—contains Air Volume and Pressure Table, sizes, dimensions, air piping layouts and other comprehensive specifications.

Use the coupon—for convenience.

YEOMANS

PUMPS FOR BUILDINGS, MUNICIPALITIES, INDUSTRIAL APPLICATIONS— and a complete line of Sewage and Waste Treatment Equipment

Yeomans Brothers Company
1423 North Dayton Street
Chicago 22, Illinois

•

Please send your Bulletin 4004.

Name_____
Company_____
Address_____
City_____ State_____

ACTUAL CHECK PROVES

No other Copying Process offers you

OZALID'S ECONOMY!

HERE'S PROOF!

See how 4 other most popular copying methods compare with the money-saving versatility of Ozalid.

	OZALID	METHOD A	METHOD B	METHOD C	METHOD D
Prints ready for immediate use	✓	✓	✓	✓	✓
No size restrictions	✓			✓	
No special plates, stencils, or inks	✓				✓
No need to make negative	✓	✓	✓		
Additional copies immediately available	✓				
Easily makes duplicate masters	✓				

WHAT IS OZALID?

• Ozalid is a *speedy copying process* that uses sensitized paper to reproduce anything typed, drawn or written. You get perfect copies of letters, records, reports, photographs, index files, drawings—anything.*

WHAT ARE THE ADVANTAGES OF THE OZALID PROCESS?

• **No size restrictions**—Ozalid copies can be made in *any* size, in sheets or continuous rolls.

• Copying errors are eliminated. There's no *check-back* to the original.

• Changes easily made. Add new material to create a "composite master". No need to re-create an entire piece.

OZALID PAPER IS UNEQUALLED FOR QUALITY, TOO!

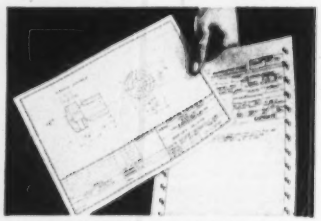
• For years, Ozalid has been established as the "Standard of Quality" among sensitized papers.

• Ozalid's "speed" is the same, month in and month out—stepping up production.

• Controlled product quality gives more prints at lower labor cost.

• Longer shelf-life—means less waste.

Imagine asking for "ten copies in three minutes" . . . and getting them. Thus releasing your typists for important work, while a file clerk runs the machine!



You get dry, positive, exact duplicates in a fraction of a minute and at a fraction of your usual cost.

**If light won't shine through, an inexpensive intermediary step is taken.*

Cut Copying Costs...Use

OZALID!

OZALID, Dept. G2
Johnson City, New York
Gentlemen: Please send free illustrated booklet that fully explains the Ozalid process.

Name .....

Company .....

Address .....

Or call your local Ozalid distributor listed in the classified telephone book.

A DIVISION OF GENERAL ANILINE & FILM CORPORATION. "FROM RESEARCH TO REALITY"

OBITUARY

Edward S. Cole, 78, hydraulic engineer and specialist in measuring water flow, died at Upper Montclair, N. J., March 19. He was active in the development of the pitometer based on the principle of the Pitot tube to measure the flow of air. He studied at the University of Illinois and Cornell University, and for several years worked with his father, John Adams Cole, in the design and construction of municipal water plants.

Harry W. Clark, 86, formerly of the Massachusetts Department of Public Health, died March 16 in North Andover, Mass. He studied at Massachusetts Institute of Technology and Cornell University. He had been with the Metropolitan Sewage Commission, the Charles River Dam Commission and the Massachusetts Highway Commission, and was a director of the Lawrence Experiment Station. As a consulting expert, he had written many papers on purification of sewage and industrial wastes.

Daniel Douglas MacGregor, 63, civil engineer and retired oil company official, died March 16, at Monterey, Calif. Mr. MacGregor, who came to this country from Scotland in 1920, was chief engineer for the Associated Oil Co., at Avon, Calif., until 1933. He then became vice-president of Mitsubishi Oil Co. in Japan, where he remained until the outbreak of the war. He retired seven years ago and made his home in Carmel, Calif.

J. Grant Lorimer, 79, Columbus, Ohio, retired architectural engineer employed by the state of Ohio as a building superintendent for many years, died March 16.

John L. McCormick, 65, for many years an engineer in charge of the Ohio Highway Department's Ravenna division, died March 17, in Ravenna.

Ben Eddins, 79, city engineer of Jonesboro, Ark., who served as county surveyor of Craighead County for 38 years, died at Jonesboro March 11. He went to Jonesboro in 1891 and for several years was employed by the United States Engineers. He was a civil engineer in construction of the Harahan Bridge across the Mississippi River at Memphis, Tenn.

Wm. B. Johnson, Jr., for 28 years with the Corps of Engineers at Savannah, Ga., died there March 18.

Modern Buildings of the Future will be Fabricated by Arc Welding

Building for the David Bradley Manufacturing Works of Sears, Roebuck and Company at Kankakee, Illinois . . . designed by Sessions Engineering Company. All welded design permitted an unusually low steel weight of 6½ pounds per square foot of area, a saving of two to four pounds per square foot over standard riveted practice.

By E. O. SESSIONS
Sessions Engineering Co.
Chicago, Illinois

We have frequently submitted our continuous-beam rigid-frame welded designs along with alternate riveted designs to fabricators for comparative bids. Where the fabricator has had previous experience with welding of frame members, the bids for the welded designs have been similar or lower than for riveted designs.

Potential savings in the cost of fabricating structural members plus greater speed in the erection of buildings are two fundamental reasons why there will be a noticeable trend toward the welding of new buildings in the future. The construction industry, at present, is undergoing a gradual change in its basic concepts of structural design. When the present "growing pains" have been remedied, it is our belief that the greater percentage of industrial plants and multi-story buildings will be designed and erected by arc welding.

Our opinion results from 35 years experience in designing many different types of structures. Since 1934, however, we have specialized in engineering principally two types of industrial buildings, the welded rigid frame design and, where this has not been feasible, reinforced concrete design.

Upon casual observation of practically any riveted building framework, it becomes evident that there is an obvious excess of material and work required for this type of construction. Most riveted designs have deep trusses, small bays and are generally cluttered with reinforcing members, angles and plates. Welded designs, on the other hand, need only simple angles and butt plates welded to beams or columns with fast downhand arc welding techniques during shop fabrication.

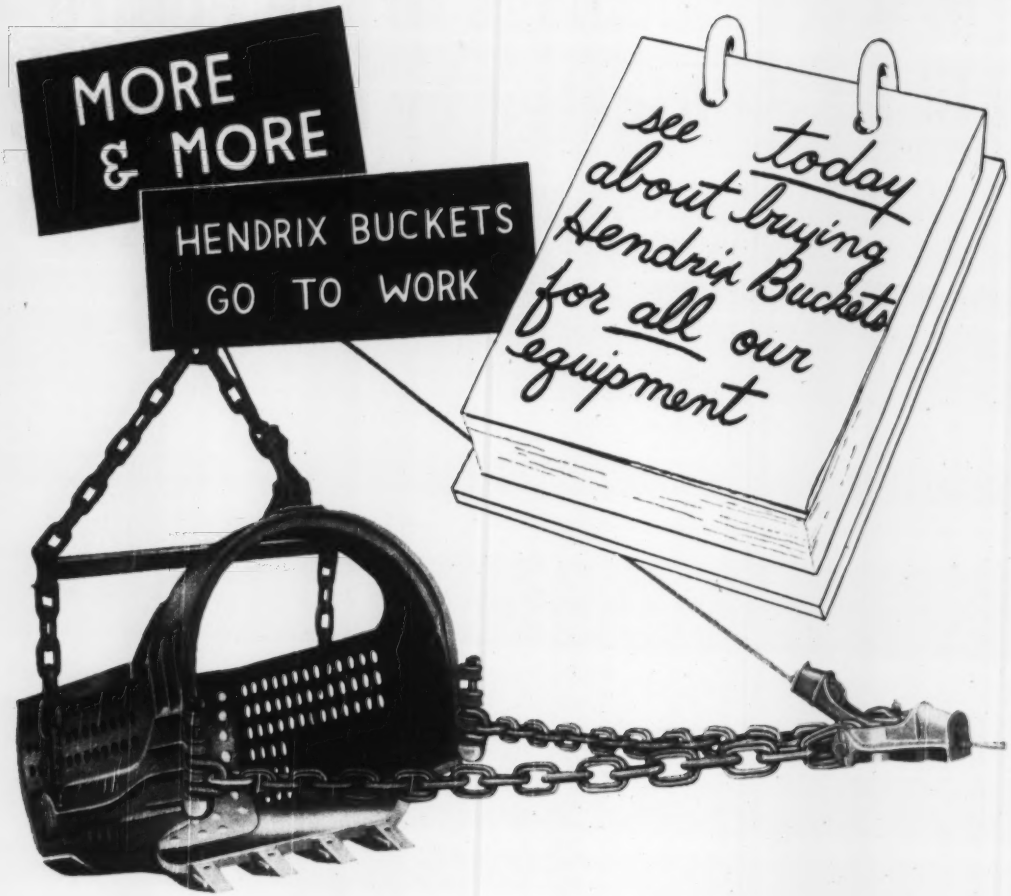
As progressive architects and engineers become more experienced with welded structural designs, building specifications will insist on this type of construction rather than permit the choice of an alternate construction. While it requires more hours of designing time to turn out a properly designed welded structure, from our experience at least, the results more than justify the added effort.

GET THE FACTS

Write for Studies In Structural Arc Welding
THE LINCOLN ELECTRIC COMPANY
Dept. 132, Cleveland 1, Ohio

Sales Offices and Field Service Shops in All Principal Cities

LINCOLN



SAVING MAINTENANCE TIME... BUILDING GREATER PROFITS

★ Full payload every trip . . . FOR MORE PROFIT.

★ Rugged all-welded construction . . . LOWER MAINTENANCE COST.

★ 14% Manganese Steel Chains and Fittings . . . STANDARD ON ALL TYPES AND SIZES.

★ A Type for Every Job . . . light, medium, or heavy-duty. WITH OR WITHOUT PERFORATIONS. 3/8 to 40 Cubic Yards.

More and more dirt-moving men notice the number of Hendrix Dragline Buckets being used on other jobs. They ask questions and learn that Hendrix Buckets move more dirt . . . easily . . . quickly . . . and without breakdowns . . . resulting in more profits. That is why more and more bucket users try Hendrix Buckets . . . then turn around and ask that *all* their draglines be equipped with money-making Hendrix Dragline Buckets!

For descriptive literature ask your dealer or write

HENDRIX *Lightweight* **DRAGLINE BUCKETS**

HENDRIX MANUFACTURING CO., INC.

MANSFIELD — LOUISIANA

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
May Materials and Labor Prices will appear in the May 4, 1950 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots incl. $1.00 per bbl. for bags, cash dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block	CONCRETE Ready Mixed 1:2:4, over 50 c.y., del.
	Cloth	Paper	Bulk	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	Sand	¾ in.	Sand grav.	Lt. wgt. agg.
Atlanta	$4.16	$3.41	$3.10	$2.00	$2.00	$1.75	$2.10	$2.10	$1.65	$1.85	$0.1725	$0.1725	$11.00
Baltimore		3.39	3.14	2.40‡a	2.40‡a	1.95‡a	2.60‡a	2.70‡a	2.45‡a	2.45‡a	.16	.16a	10.25
Birmingham	3.75	3.00	2.68	2.06	2.06	1.84	2.50	2.50	1.00	1.20	.145	.145	7.75
Boston		3.67	3.41	2.50a	2.50a	2.50a	1.60a	1.70a			.190	.205a	10.45A
Chicago	3.83/3.99	2.92/2.99	2.68/2.74	2.75‡b	2.75‡b	3.20‡b	2.75‡b	2.75‡b	2.00‡	2.00‡	.20	.20b	9.70
Cincinnati	4.14	3.34	3.08	1.75‡c	1.75‡c	1.85‡c	2.00‡k	2.00‡k	1.50	1.50	.185	.205	11.65d
Cleveland	3.83	3.03	2.75	1.90cf	1.65f	1.55	3.55‡a	3.55‡a	2.75‡	2.75‡		.21	11.80g
Dallas	3.54	2.74	2.49	2.00	2.15	1.75	2.10f	2.15			.080a	.125	9.30
Denver		3.34	3.20	1.85	2.00	1.15					.20	.23a	9.65
Detroit		2.98	2.74	2.25‡b	2.25‡b	3.00‡b	2.75/3.00‡	2.75/3.00‡	3.00‡	3.00‡	.17	.18a	9.85
Kansas City	3.93	3.13	2.88	1.90	1.90	1.50‡	1.90a	1.90a			.17aq	.215c	10.40b
Los Angeles		3.72a	3.32a	1.94‡a	2.04‡a	1.74‡a	1.92‡a	1.92‡a			.12f	.227	9.70hA
Minneapolis	4.13cd**	3.37cd	3.07cd	2.40‡aq	2.40‡aq	1.45‡aq	2.50‡aq	2.50‡ac			.21c		10.90f.m
Montreal		2.46ac	2.31ac		2.50h	2.00b	80cj	1.10cj			.22	.20a	9.05ed
New Orleans		2.90e	2.65e	2.32	2.32	1.82			1.05	1.25	.25		12.40
New York	4.29	3.49	3.24	2.10bk	2.10bk	1.45bk	2.35bl	2.35bl					10.50a
Philadelphia	3.93/4.23‡	3.13/3.43‡	2.87/3.17‡	2.45‡	2.55‡	2.05‡	1.90‡	1.95‡	1.50	1.50	18/.22		10.80
Pittsburgh	3.90	3.18	2.85	2.05‡	2.05‡	2.00‡	2.50‡	2.50‡	2.05	2.05	.21d	.21d	10.85
St. Louis		2.99/3.05b	2.77b	2.40/2.60‡am	2.40‡am	2.00/2.40‡am	1.60j	1.60j	1.15	1.15	.215	.24cx	9.40
San Francisco		3.39	2.99	1.86	1.86	1.96	1.96					.25c	10.15c
Seattle		3.55a	3.05a	2.75‡bm	2.75‡bm	2.75‡bm	3.50‡bm	3.50‡bm			.22j	.3135f	9.75j

‡ Delivered. * Prices incl. dealers comm. except as noted. ** Prices incl. dealers comm. except as noted. CEMENT: *a* Subj. to 10¢ dis. *b* Less 2% for cash. *c* C.L. price dealers' comm. not incl. *d* Dealers sell only I.C.L. *e* Plus switching charges. ** May be discontinued after Jan. 1. SAND, GRAVEL, STONE & SLAG: *a* Truck lots. *b* Per cu. yd. *c* 5 tons or more. *e* ¾". *f* Pea gravel. *g* Less 5% for cash. *h* Less than 5 tons. *i* Sales tax incl. *j* F.o.b. quarry. *k* Barge lots sand. *l* F.o.b. scow Hudson River. *m* Less 2% for cash.

CONCRETE BLOCK: *a* Cinder. *b* Waylite. *c* Haydite. *d* Celocrete. *e* 5 ½ x 8 x 12 in. *f* 8 x 4 x 16. *g* F.o.b. truck at job. *h* Less 2% for cash *j* Less 1% for cash.

READY MIXED CONCRETE: *a* 5 cu. yds. or over del. Mats. *b* 25 cu. yds. or more. *c* 10-1000 lb. brackets. *d* Truck loads up to 500 cu. yds. *e* 2,000 lb. comer. *f* 2500 lb. comp. *g* Aver. haul 7-9 mi. zone. *h* Less 50¢ for cash. *i* 50% off for cash. *j* 2% off for cash. *k* Sales tax included. *l* 1:2½:4. *m* 40c heating charge off on Apr. 15.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10c. per bbl. for payment within 15 days of date of invoice. Subject discount 10c. per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For cloth bags, add $1.05 per bbl.; 25¢ refund allowed for each returnable bag; for paper bags add 25¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn.	$2.40†	Buffington, Ind.	$2.30	Steelton, Minn.	$2.40	Muskegon, Mich.	$2.50†	Toledo, O.	$2.40†
Clinchfield, Ga.	2.40†	Independence, Kan.	2.30	Leeds, Ala.	2.25	Saginaw, Mich.	2.35†	Milwaukee, Wis.	2.50†
Kingsport, Tenn.	2.40†	Hannibal, Mo.	2.35	Duluth, Minn.	2.40	Wyandotte, Mich.	2.40†	Green Bay, Wis.	2.50†
West Des Moines, Iowa	2.45†	Northampton, Pa.	2.40	Hudson, N. Y.	2.40	Buffalo, N. Y.	2.40†	Ironton, O.	2.30
Nazareth, Pa.	2.40†	Universal, Pa.	2.40	Alpena, Mich.	2.25†	Oswego, N. Y.	2.60†	Montreal City	2.13
Bath, Pa.	2.40†	Waco, Tex. (+ 10¢ tax)	2.20	Detroit, Mich.	2.40†	Cleveland, O.	2.40†	W. Winfield, Pa.	2.40†

†*Prices to hold for second quarter of 1950*

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3½x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	PAVING ASPHALT Per ton, less than 80 penetration Tank car	Drums	ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration Tank car—	Drums	CUTBACK ASPHALT Per ton Tank car	Drums	ROAD OIL Per gal. Tank car	ASPHALT EMULSION (Quick-breaking) Per gal. Tank car	Drums
Atlanta	$73.00	$35.00	$2.25									
Baltimore	150.00‡	57.70‡		$21.00		$.085	$0.14	$.085	$.16	$.085c	$.085	$0.11
Birmingham		32.50										
Boston				24.50a	$35.50a	.1036a	.185a	.115a.c	.205a.c	.10a	.113a	.205a
Chicago	155.00‡a	85.00/88.00‡b	2.70/3.10‡f	20.25b	30.25b	19.25b	29.25b	.0875b.c	.16c	.075b	.1025/.1075b	15/.1675b
Cincinnati				19.00k		.085	.085	.085c				
Cleveland		49.00‡	3.43g	24.00	34.00	24.00c	33.50c	.10c	.22c	.10	.11	.25
Dallas	e	40.00	e	23.95	42.99	.1012	.1898	26.99	47.97	.0987	.1062	.1423
Denver		43.00										
Detroit				26.65		12.00c		.0976c		.092		.197
Kansas City		40.00d		18.05cl				.07c.c	.07.25c.c	.0585c		
Los Angeles	e		e	12.50dm		12.50dr		14.00d		12.50dr	.0775g	.1575g
Minneapolis			2.83A	25.50	36.00	22.00c	33.00c	24.00	35.00	.09	.12	.22
Montreal	137.00	e	e	27.00n	39.65n	16.70n.c	18.70n.c	16.30n.c	18.50n.c	13.20n.c	.174n	.215n.c
New Orleans				16.50e	a	16.50e.c	a	.08e.c	a	.0775	.08	.1425e
New York			2.35f	23.50	35.80q	22.50c	41.88q.c	.0940c	.1767q.c	.0890	.0940	.1747q
Philadelphia	150.00	110.00	4.00	23.00		22.00c		.093c.c				
Pittsburgh	165.00	42.00	4.50	22.00	35.00	10	22	27.00	39.00	.095	.09	21
St. Louis				19.25f		16.53		.0841.c		15	1081	25
San Francisco		62.75c		14.50q	30.00q.p	14.50q.c		16.50q			.08	14
Seattle				15.50A	36.00A	16.00A.c		.175A.c	215A.c.w	16.00A.c	.08A	.09A

‡ Delivered.
PAVING BRICK & BLOCK: *a* C.L. *b* 3½ x 4 x 8½. *c* 2½ x 8½ x 4. *f* F.o.b. Buffalo, Kans. *e* Not used. *f* 2" interior 6/6 treat. *g* 3". *A* 8/c treat.
ASPHALTS: *a* Price at plant, Everett, Mass. *b* F.o.b. refinery, Lockport, Ill. *c* F.o.b. Sugar Creek, Mo. *d* F.o.b. refinery El Segunda. *e* F.o.b. Baton Rouge. *f* F.o.b. Wood River or Roxana, Ill. *g* F.o.b. Richmond, Calif. *h* F.o.b. Martinez, Calif. *k* 50-110 penetr. *l* Less than 100 penetr. *m* 40-80 penetr. *n* Tax incl. *o* Drums not avail. *p* Shipped in steel bbl. *q* Use of used drums. *r* In customer's drums. *s* Shipped in drums, per drum. *t* 55-gal. drums. *u* Per 100 gal. *v* Per ton. *w* Per gal.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT. SHAPES–PLATE	REINF. BARS billet	RIVETS ¾-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton: Standard	Light	Re-rolled	TRACK SUPPLIES: Angle Bars	Spikes	Tie Plates	Track Bolts
Birmingham Area	$3.40	$3.45	$7.25	....	$68.00	$75.00	Not	$4.40	$5.60	$4.20	....
Chicago Area	3.40	3.45	7.25	$4.20	68.00	75.00	avail-	4.40	5.60	4.20	....
Pittsburgh Area	3.40	3.45	7.25	4.20	68.00	75.00	able	4.40	5.60	4.20	....
Buffalo Area	3.45	3.45	7.25	4.20	68.00	75.00	....	4.40	5.60	4.20	$8.85
Cleveland	....	....	7.25	....	.....	.....	.....	....	....	....	8.85
Youngstown Area	....	3.45	....	....	.....	.....	.....	....	5.60	....	....
Geneva	3.40	....	....	....	.....	.....	....	....	....	....	....
Los Angeles	....	4.15	....	....	.....	.....	.....	....	5.60	....	....
Pueblo	3.40	3.45	....	....	68.00	75.00	....	4.40	5.60	4.20	8.85

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb base price	REINFORCING BARS Per 100 lb., base price *u*: 5 tons to carload lot *b* New billet	Rail steel	Add $/cwt for switch	Del.	EXPANDED METAL LATH *h* Per 100 sq. yd., carload lots: Std. diamond mesh, 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING *d* Per 100 sq. ft., carload lots: 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No. 6 & 6 wires
Atlanta	$4.75‡	$5.225*k*	$5.225*k*	$.025	$.10	$31.50	$31.50			
Baltimore	5.80	4.91*l*	....	....	.10	40.00	43.00			
Birmingham	5.20	5.15	5.15	.05	.15	43.00*p*	45.50*p*			
Boston	5.75*k*	5.56*k*	5.56*ke*	....	.10/.15	31.00	33.00			
Chicago	5.05	4.40*ff*	4.40*ff*	.0625	....	32.00‡	34.50‡			
Cincinnati	5.59‡*r*	5.59*r*	....	....	....	33.00*zz*	35.00-*zz*			
Cleveland	5.17	4.47*s*	....	....	.10	34.00‡	36.50‡			
Dallas	6.75	5.30	5.30	....	....	43.50	46.00			
Denver	6.45	6.65*e*	....	....	....	48.00*s*	52.00*qs*			
Detroit	5.64‡	5.19*n*	....	....	.10	35.00	43.50			
Kansas City	5.65*s*	5.50*q*	....	....	....	39.00*s*	41.00*s*			
Los Angeles	5.50‡*kk*	5.25*q*	....	....	.15	38.00*f*	40.00‡*knn*			
Minneapolis	5.41*kk*	6.02*ll*	6.02*ll*	....	.15	33.50	36.00			
Montreal	6.75*i*	4.75*k*	4.75*q*	....	....	44.10*k*	46.80*k*			
New Orleans	....	5.40*ek*	....	....	.05	38.50	41.00			
New York	5.45*r*	5.58	5.33	....	.20	35.50*st*	38.00*st*			
Philadelphia	5.25	5.55	....	....	....	34.50‡	36.50‡			
Pittsburgh	4.90/5.00	4.90/5.00	....	....	.10	32.50	34.50			
St. Louis	5.38‡	4.32*e*	4.77*e*	....	....	42.00*aa*	48.00*aa*			
San Francisco	6.00*ss*	5.75*e*	....	....	.15	37.50	40.00			
Seattle	4.05*e*	5.35*ed*	....	....	....	52.00*smm*	42.00*essmz*			

A.P.M.* Joliet, Illinois, Donora, Penn., $2.46
F.o.b. Mill: Monessen, Penn., $2.46

A.P.M.* Joliet, Illinois, Donora, Penn., $1.75
F.o.b. Mill: Monessen, Penn., $1.75

A.P.M.* Joliet, Illinois, Donora, Penn., $2.58
F.o.b. Mill: Monessen, Penn., $2.58

* At Producing Mill

‡ Delivered. *b* 1–5 tons, add 35c. Less than 1 ton, add 50c. *c* 20 tons or over base. *e* F.o.b. plant. *f* Includes delivery in free delivery zone. *g* 10,000 to 39,999 lbs. *k* List price. Dominion tax exempt. Provincial and Municipal tax extra. *l* Plus Dominion, provincial and Municipal sales tax. *p* Price per ton. *k* F.o.b. city. *l* Intermediate and hard grade, new billet. *m* Per sq. yd. *n* 5–10 tons. *o* 5 to 15 tons base. *p* Del. of 5000 sq. yd. or less. *q* Stde ribbed. 4 lb. per sq. yd. *r* 5 tons or over. *s* LCL. *t* Asphalt coated. *u* Note: Revised size extra—1 in., 1¼ in., 1½ in. 10c, ¾ in., ⅞ in. 15c, ⅝ in. 25c, ½ in. 50c, ⅜ in. 80c, ¼ in. $1.90. *v* Under 20 tons. Straight. *w* Copper bearing. *x* 2–5 lb. per sq. yd. *y* $0.0083 transportation tax included. *z* Copper alloy. *aa* Delivered truck to job. Contractor to do unloading. *dd* F.o.b. dock. *ee* F.o.b. cars. *ff* Carload lots. *gg* Including sales tax. *hh* 10,000–19,999 lbs. *ii* Rolled at Geneva mill. 400–3999 lbs. *kk* ¼" ribbed. *ll* 5 to 8 tons. *mm* 2% off for cash. *nn* Feb. and Mar. correction at $38.50.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

Mill	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in. *a*	std. 8 in. *aa*	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 12 in. *aa*	24 in. *ds*	36 in. *ds*	CLAY DRAIN TILE ASTM C4-24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14-41 12 in.	24 in.
Atlanta	$89.50	$0.43	$0.67	$3.39	$7.00	$114.00	$140.00	$0.45	$2.00
Baltimore	93.88	.51	.98	3.95	10.00	220.00	341.00	.80	2.28
Birmingham	82.50	.40	.72	2.84	....	210.00‡	375.00‡	.90	2.80
Boston	97.46	.413*uzz*	.823*uzz*	3.60*uzy*	10.00*uzy*	173.40	267.60	1.45‡*mg*	3.60‡*mg*
Chicago	96.49	.51	1.00	4.25	13.25	150.00‡	270.00‡	.70	2.35
Cincinnati	94.90	.455	.827*5*	3.555	10.50	166.80‡	257.70‡	.60	2.25‡
Cleveland	97.13	.357*x*	.688*5x*	3.015*x*	8.405*x*	147.50	231.00	.65*m*	2.50*m*
Dallas	99.28	.365	.657	2.63	6.25	.....	.....	.49	1.60
Denver	104.36	.41*dd*	.71*dd*	2.98*dd*	....	.....	.....	.74*dd*	2.50*dd*
Detroit	92.13	.545	1.055	4.19	12.10	200.00*m*	310.00*m*	.65	2.50
Kansas City	98.41	.418*m*	.74*m*	....	....	215.00*m*	.....	.60*l*	2.00*l*
Los Angeles	111.06	.426	.927	4.532	11.298	193.00‡	324.60‡	.72	2.05‡*ff*
Minneapolis	91.86/100.67	.62*mo*	1.12*mo*	4.55*mo*	....	.....	.....	1.29*hh*	3.67*hh*
Montreal	90.00	.77*s*	1.35*s*	4.47*s*	7.23*ss*	.....	.....	72.00‡*kkn*	218.00‡*kkn*
New Orleans	92.68	.453	.82	4.41	8.85*	235.00*hh*	412.00*hh*	.65	2.29
New York	92.80/97.50	.55	1.06	4.25	11.60	.....	.....	1.00	2.50
Philadelphia	90.47	.54	.99	4.08	10.28	235.00‡	300.00‡	1.25*h*	3.20*h*
Pittsburgh	97.76	.36*m*	.70*m*	2.70*m*	6.625*m*	147.50	230.00	1.05*h*	2.50*g*
St. Louis	94.27	.48	.92	3.80	9.00	.....	.....	1.10*s*	2.45*hl*
San Francisco	111.06	.55*d*	1.08*d*	4.68*d*	11.70*d*	195.00*dl*	325.00*dl*	.69	2.85
Seattle	112.95	.516	.916	....	....	150.00*e*	.....	.80*ee*	2.40*ee*

*WROUGHT STEEL PIPE (Fuel-standard weight)

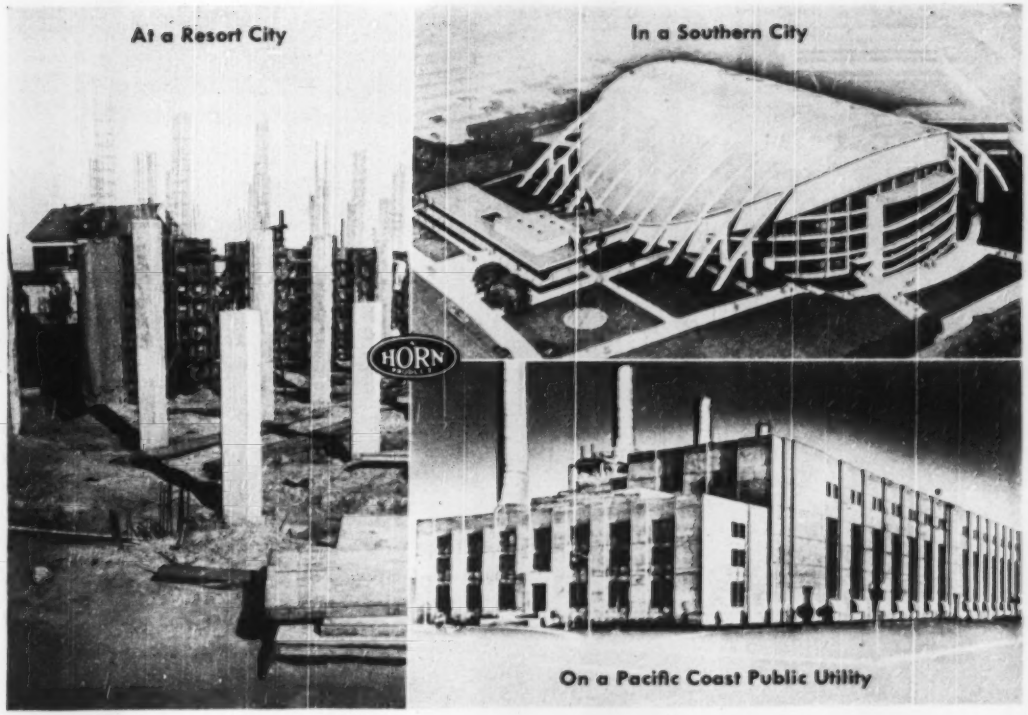
Mill	3½ to 6 in. Lap Weld† Black Galv. %	2½ & 3 in. Butt Weld† Black Galv. %	Mill	2½ & 3 in. Butt Weld† Black Galv. %	3½ to 4 in. Lap Weld† Black Galv. %
Lorain, Ohio	48.0 43.0	33.0 27.5	Sharon, Pa	48.0 43.0	33.0 27.5
Aliquippa, Pa	48.0 43.0	33.0 27.5	Wheatland, Pa	48.0 43.0	33.0 27.5
Sparrows Pt., Md	46.0 40.0	31.0 25.0	Erie, Pa	48.00 43.00	33.00 27.50
Benwood, W. Va	48.0 43.0	33.0 27.5	Fontana, Calif	48.00 43.00	33.00 27.50
Youngstown, O.	48.0 43.0	33.0 27.5			
Indiana Harbor, Ind	47.0 40.0	32.0 25.0			

‡ Delivered. *a* R. & S. class B and heavier, CL, Burlington, N. J. (base) $87.50. Based on existing freight rates; subject to rate change. *c* Gas pipe and class A, $5 per ton additional. 4 in., $5 per ton additional. 30 in. and larger, usually $1 per ton less. *h* Extra strength ASTM C 200-44T. *s* 4-in., $90. *d* 8S361-A. *e* 30 in. *g* Culvert pipe. Reinforced, ASTM C76-41. *h* Reinforced. ASTM C75-41. *i* Reinforced. ASTM C76-37. *y* Centrispun. *k* Per 100 ft. *l* F.o.b. plant. *m* Truck delivery. *o* Listed price is based on LCL (no minimum). *p* Less than 5 tons, per price per ft. *t* Within switching limits. *u* ASTM C13-40. *v* F.o.b. city. *x* 2 ft. lengths. *y* 3 ft. lengths. *z* CESA A 60-1941 specifications used. *aa* No standard specification in Can. *bb* Freight allowed to destination in city. *cc* Truck loads; f.o.b. plant, Newton. *dd* LCL, delivered, f.o.b. truck. *ee* 1% off for cash. * Not stocked, only made to order. *ff* 21".

*WROUGHT STEEL PIPE: Discounts from standard list consumers carload prices. Base price approx. $200 per net ton. List prices per ft.: *Butt weld:* ¼ in., 5¼¢; ⅜ in., 6¢; ½ in., 6¢; ¾ in., 8¼¢; 1 in., 11½¢; 1¼ in., 17¢; 1½ in., 23¢; 2 in., 27½¢; 2½ in., 37¢; 3 in., 58¢; 3½ in., 76½¢. *Lap weld:* 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Freight rates to destination to be added to price plus 3 percent tax on transportation.

WROUGHT IRON PIPE: List prices per ft. same as wrought steel pipe. Discount for Pittsburgh base. *Butt weld* — 1 in. and 1¼ in. black, +10.5, galv. +33.0; 1½ in. black, 4.5, galv. +29.5; 2 in. black, 4 galv. +29.0. *Lap weld* — 2½ in. to 3½ in. black + 11, galv. +32.5; 4½ in. to 8 in. black + 8, galv. +28.0. Freight rates to destination to be added to name delivered price.

(Continued on page 69)



formfilm

For Protective Coating of Plywood Forms

eliminates

oil staining

and reduces rubbing

costs

All Over America Contractors Report

- Increased speed of form handling
- Increased form use without recoating
- Increased life of forms
- Eliminates all disadvantages of oil or oil deposits on concrete

Satisfied Users in Salt Lake City say:

ALFRED BROWN CO.—
"Rubbing costs reduced, grain raise eliminated."

OLSON CONSTRUCTION—
"More re-uses of forms especially on exposed concrete work."

TOLBOE & HARLIN—
"Leaves smooth concrete surface, reduces cost of staining."

A. C. HORN COMPANY, INC.

Manufacturers of materials for building maintenance and construction—established in 1897

10th Street & 44th Avenue, Long Island City 1, N. Y.

Los Angeles • San Francisco • Houston • Chicago • Toronto

SUBSIDIARY OF SUN CHEMICAL CORPORATION

EN

GENTLEMEN:

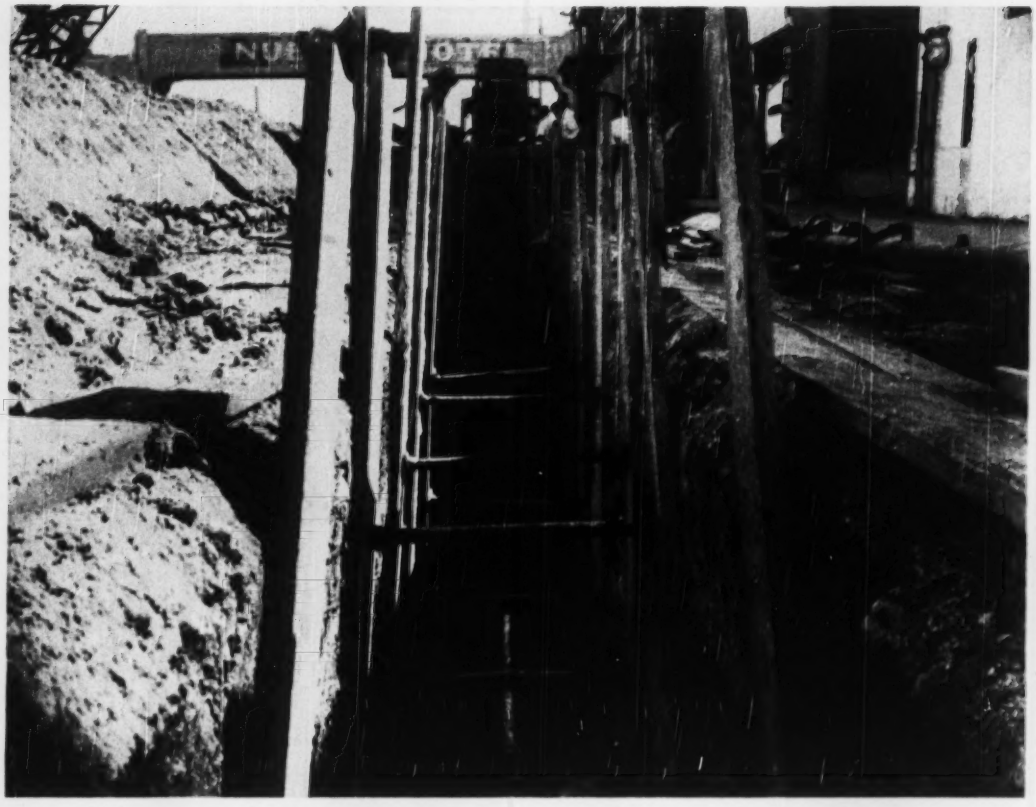
Please send me complete data on FORMFILM.

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____



"DRY RESULTS OR NO PAY"

On that basis, T. H. Lee, Contractor, San Antonio, Texas, gave MORETRENCH an order to predrain his Water Street sewer excavation in Corpus Christi.

Past wellpoint failures had convinced many contractors and engineers that wellpoints would not work in the fine sand, silty clay and blue plastic mud found on this old beach front where ground water is four feet below street level.

Let's let our demonstrator's reports finish the story:

Mon. "Started pumping at 6 P.M."

Tues. "Dug a test hole this morning – water below subgrade."

Wed. "Started excavation with digging machine. Dry cut. Vertical 10-foot embankment remained in excellent shape with skeleton sheeting."

MORETRENCH RESULTS ALWAYS PAY
– in time and money saved!
See for yourself on your next wet job.
CATALOG ON REQUEST.

MORETRENCH CORPORATION

90 West St. New York 6 | 4900 S. Austin Ave. Chicago 38, Illinois | 7701 Interbay Blvd. Tampa 9, Florida | 315 W. 25th St. Houston 8, Texas | Rockaway New Jersey

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Bar. **Prices in Bold Face:** *All Fir boards, dimension, planks No. 2, Fir small timbers and timbers are No. 1.* *Lengths up to 20 ft.* (*Prices in stance*)

		1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta	†	**$70 00**	**$71 00**	**$60 00**	**$62 00**	**$65 00**	**$68 00**	**$70 00**	.....	.....
Baltimore		**68 00**	**69 00**	**66 00**	**60 00**	**60 00**	**65 00**	**82 00**	.....	.....
		78 00g	*78 00g*	*74 50g*	*74 50g*	*74 50g*	*74 50g*	*76 00*	*$71 00*	*$71 00*
Birmingham		**73 00**	**76 00**	**63 00**	**65 00**	**68 00**	**75 00**	**85 00**	.....	.....
		65 00	*65 00*	*65 00*	*65 00*	*65 00*	*65 00*	*81 00*	*81 00*	*81 00*
Boston		**86 00**	**86 91**	**91 00**	**91 00**	**91 00**	**96 00**	.....	.....	.....
		91 93	*91 93*	*93 95*	*81 83*	*81 83*	*101 103*	*101 103*	*101 103*	*101 103*
Chicago	‡	**82 85**	**84 86**	**74 76**	**83 85**	**86 87**	**87 89**	**92 00**	.....	.....
	‡	*86 88*	*90 91*	*88 89*	*88 89*	*90 91*	*90 91*	*92 00*	*90 97*	*90 97*
Cincinnati		**80 00**	**82 00**	**80 00**	**80 00**	**82 90**	**85 00**	**93 95**	.....	.....
		88 00	*90 00*	*88 90*	*88 00*	*95 00*	*97 00*	*98 00*	*98 00*	.....
Cleveland		**75 00**	**77 00**	**78 00**	**82 00**	**82 00**	**84 00**	*92 00*	*92 00*	*92 00*
Dallas	k†	**60 00**	**66 00**	**61 00**	**53 00**	**56 00**	**57 00**	**90 00**	.....	.....
Denver		*Not in stock*		*100 00*	*99 00*	*99 00*	*100 00*	*104 00*	*114 00*	*112 00*
Detroit		**95 00**	**95 00**	**85 95**	**95 00**	**95 00**	**95 00**	.....	.....	.....
		82 50	*82 50*	*87 00*	*80 00*	*80 00*	*85 50*	*95 00*	*95 00*	*95 00*
Kansas City		**100 00**	**105 00**	**105 117**	**105 112**	**110 115**	**117 00**	.....	.....	.....
	#	*95 00*	*100 00*	*104 00*	*100 00*	*104 00*	*104 00*	*115 00*	*135 00*	*135 00*
Los Angeles	*	*80 00*	*80 00*	*88 00*	*88 00*	*88 00*	*88 00*	*112 00*	*127 00*	*112 00*
Minneapolis	‡¶	*105 00*	*105 00*	*105 00*	*105 00*	*105 00*	*105 00*	*145 00*	*145 00*	*145 00*
Montreal	ab	*70 00*	*74 00*	*70 00*	*72 00*	*75 00*	*83 00*	.....	.....	.....
		140 00	*140 00*	*140 00*	*140 00*	*140 00*	*140 00*	*155 00*	.....	.....
New Orleans	†	**66 00**	**70 00**	**70 00**	**75 00**	**75 00**	**70 00**	*85 00*	.....	.....
	†	*68 70*	*68 70*	*71 00*	*75 00*	*78 50*	*78 50*	*67 00*	*67 00*	*100 00*
New York	‡	**92/97**	**95/100**	**87.50/92.50**	**90/95**	**95/100**	**97½/102½**	**115/125**	.....	.....
	‡	.....	.....	*Range from $93.00 to $100.00*				*97.50/105*	*105/120*	*105/120*
Philadelphia				**Range from $88.00 to $97.00**				**88/97**	.....	.....
				Range from $105.00 to $115.00				*105/115*	*105/115*	*105/115*
Pittsburgh	†	**75/85**	**75/85**	**75/85**	**75/85**	**75/90**	**75/90**	**100 00**	.....	.....
	†	*90/110*	*90/110*	*90/110*	*90/110*	*90/110*	*100/120*	*120/150*	*120 00*	*120 00*
St. Louis	‡c	**87 75**	**89 75**	**79 50/88 50**	**88 25/**	**90 50/93 75**	**93 25/97 5c**	.....	.....	.....
	‡c	.....	.....	*105 75/110g*	*106 25e*	*106 25e*	*105 75e*	*119 00e*	*127 50*	.....
San Francisco	†	*65 00*	*65 00*	*67 00*	*66 00*	*66 00*	*65 00*	*65 00*	*65 00*	*65 00*
Seattle	†	*70 00g*	*70 00g*	*70 00g*	*70 00g*	*70 00g*	*70 00g*	*70 00g*	*70 00g*	*70 00g*

† F.o.b. mill. ‡ Delivered. # Retail-LCL. * Yard prices.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* a Spruce & Tax exempt. c 5M lots. d 8–12 ft. lengths. e 8–16 ft. lengths. f 18 ft. or under. g No. 1 common. h 10-12 ft. lengths. i 8 ft. lengths. j 10-16 ft. lengths. k No. 3 common.

PLYWOOD: Special concrete form grade Fir Plywood, 4' by 8' panels, 5-ply, satisfied 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ¼", $103.00; on ⅜", $124.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. a Lower rate by water shipment. b 50,000 lb. minimum.

	LONG LEAF Y. P. Merchantable grade up to 20 ft.		PLYWOOD Rail freight increment (See note for base price*)	
	2x12 Rgh	12x12 Rgh	¼"	⅜"
Atlanta			$22 32	$27.24
Baltimore	$138.00	$134.00	22.86	27.90
	.....	.....	.....	.....
Birmingham	115.00	125.00	21.78	26.58
	.....	.....	.....	.....
Boston	114.00	114.00	22.86	27.90
	.....	.....	.....	.....
Chicago	116/118	116/118	18.72	22.80
	.....	.....	.....	.....
Cincinnati			21.78	26.58
	.....	.....	.....	.....
Cleveland			22.20	27.12
Dallas	88.00	88.00	18.72	22.80
Denver	.....	.....	13.92	16.98
Detroit	100.00	.....	21.78	26.58
	.....	.....	.....	.....
Kansas City	.....	.....	16.86	20.16
	.....	.....	.....	.....
Los Angeles	.....	.....	13.38a[b]	16.26a[b]
Minneapolis	.....	.....	16.86	20.16
Montreal	.....	.....	.....	.....
	.....	.....	.....	.....
New Orleans	100.00	108.00	18.72	22.80
	.....	.....	.....	.....
New York	200/220[f]	200/220[f]	22.86	27.90
	.....	.....	.....	.....
Philadelphia	180.00	180.00	22.86	27.90
	.....	.....	.....	.....
Pittsburgh	.....	.....	22.86	27.48
	.....	.....	.....	.....
St. Louis	.....	.....	18.72	22.80
	.....	.....	.....	.....
San Francisco	.....	.....	10.08a	12.30a
Seattle	.....	.....	.....	.....

Range from $88.00 to $97.00

Range from $105.00 to $115.00

* Freight rate increase of 6¢ per cwt., not included in these figures.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS: Discounts from jobbers list, Feb. 1, 1950a: Single or Double Thickness A quality	B quality	EXPLOSIVES: Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	76%c	76%c	$0.2025
Baltimore	66-10%c	67-10%c	.2025
Birmingham	67%c	67%c	.1575
Boston	60%c	60%c	.2025
Chicago	81%	81%	.2025
Cincinnati	81-10%	81-10%	.2025
Cleveland	81-10-10%	81-10-10%	.2425
Dallas	65%d	65%d	.215
Denver	67-5%c	67-5%c	.2075
Detroit	81-10-10%	81-10-10%	.2025
Kansas City	65-10%b	65-10%b	.2075
Los Angeles	56%	61%f	.21
Minneapolis	64%c	64%c	.2075
Montreal	40-5%bc	40-10-5%bc	.18.50fa
New Orleans	68%c	68%c	.2125
New York	85%	85%	.32g
Philadelphia	69%c	70%c	.2025
Pittsburgh	70%c	70%c	.175
St. Louis	70-10%c	70-10%c	.2075
San Francisco	66%c	73%c	.2075
Seattle	54%c	55%c	.21

Price of 60% Ammonia Gelatin is $0.015 per lb. higher than 40%

Glass, a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $66.00 for A quality, $52.75 for B quality. b Discount from list, Sept. 1939; sales tax included, but 6% tax exemption not allowable for. c Single thickness. d Discount from list of Jan. 16, 1946. f ss: ds—60%. g Disc. from list of 1-29-47. h Disc. from list of Aug. 15, 1938.

Explosives. * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. g In borough of Kings, Queens and Richmond and in Manhattan south of Canal St., add delivery charge of $9.00 per trip. a F.o.b. city per 100 lb. forcite, 40%. Forcite 60%, $49.90. i F.o.b. Beloeil (near Montreal).

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.155	$0.1825	$0.2025
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.16 – .1675	.1875–.20	.2075–.22
Rocky Mtn. States	.16 – .1725	.1875–.20	.2075–.225
Pacific N. W. States	.1575–.17	.19 – .2025	.21 – .2225
Pacific S. W. States	.155 – .1625	.1875–.195	.2075–.2175

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail: Pine*	Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.43	.....
12-in.— 2-ft. from butt	6-in.	50 to 59-ft.	.46	.....
12-in.— 2-ft. from butt	6-in.	60 to 69-ft.	.50	.....
12-in.— 2-ft. from butt	6-in.	90 to 100-ft.	.....	.79
13-in.— 3-ft. from butt	5-in.	91 to 100-ft.	.....	.80
14-in.— 2-ft. from butt	6-in.	50 to 69-ft.	.50	.87
14-in.— 2-ft. from butt	6-in.	70 to 79-ft.	.54	.81
14-in.— 2-ft. from butt	5-in.	80 to 85-ft.	.67	.82
14-in.— 2-ft. from butt	5-in.	85 to 89-ft.	..	.83
14-in.— 2-ft. from butt	5-in.	90 to 100-ft.	.....	.87

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'8" Untr.	7"x9"x8'8" Tr.
Boston	Oak	f	.....	.....	.....
	Pine	f	.....	.....	.....
New York	S. L. Sap Pine	$1.65	$2.85	$2.00	$3.30
	Mixed Oak	1.80	3.05	2.80	3.60
Birmingham	Hardwood	1.00	1.60a	.....	2.25a
Chicago	Red Oak	.....	2.80/2.60a	.....	3.52/3.45a
Los Angeles	Douglas Fir	.....	.....	.....	.....
	Redwood	.....	.....	.....	.....
Philadelphia	Red Oak	2.33	3.13a	3.10	4.25a
St. Louis	White Oak	2.40	.....	3.10	.....
	Red Oak	2.30	3.00a	3.05	3.95a
	Sap Pine or Cypress	2.85a	.....	3.70	.....
San Francisco	Douglas Fir	1.28c	2.24c/f	1.70d/f	3.05c/f
Montreal	Birch or Maple	h	h	h	h

Tr — Treated; Untr — Untreated. a Creosoted. b 7" x 9" x 8'. c Empty cell. e Green. f F.o.b. cars. h No constant price available. i Not available

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$4.50
Chlorine cylinders, liquid, per lb. f.o.b. works	.07–.12
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	22.00
Silicate of soda, 52 deg. in drums, f.o.b. works, per 100 lb.	1.80
Soda ash, 58%, in paper bags, per 100 lb. dense	1.35
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.50
Sulphate of copper, in bags, 99%, per 100 lb f.o.b. works	7.00

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton, In paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta	.....	.....	.....	.....	.....	.....	$25.00	$25.00	$19.00	$17.50	$17.50
Baltimore	$175.00	$185.00	$325.00	$380.00	.....	.....	32.00*k*	35.00*k*	26.00	20.00	.....
Birmingham	97.50	104.00	195.00	231.00	.....	.....	20.00*ff*	22.50*gg*	24.74	16.30	.....
Boston	140.00†	149.00†	280.00†	317.00†	.....	.....	32.00*x*	35.00*x*	30.80†	26.40†	.....
Chicago	115.00	122.50	230.00	.....	.....	.....	21.00	23.00	28.50	23.00	.....
Cincinnati	170.00*j*	180.00*j*	240.00*jdd*	295.00*f*	.....	.....	32.25*f*	44.00*f*	24.25*j*	24.25*f*	24.25
Cleveland	118.00*ee*	126.00*ee*	236.00*ee*	.....	.....	.....	28.50	28.50	24.00	22.00	27.50*aa*
Dallas	.....	110.00	.....	.....	.....	.....	18.75	33.25	31.90	21.80	.....
Denver	.....	.....	.....	.....	.....	.....	32.00	32.00	34.80*bb*	28.00*bb*	34.00*bb*
Detroit	* 117.12	124.90	234.47	.....	$290.73	$322.23	31.50*ee*	30.00*ee*	28.00	26.50	.....
Kansas City	115.50	122.50	.....	245.00	303.50	367.00	24.25*o*	24.25*o*	36.00*p*	32.00*p*	30.00*p*
Los Angeles	.....	.....	.....	.....	.....	.....	20.00*ll*	.....	36.00	36.00	32.00
Minneapolis	158.00*p*	176.00*p*	330.00*p*	176.00*aap*	.....	.....	30.00*vp*	34.00	35.00*bbe*	26.00*bbe*	35.00*bbde*
Montreal	115.00*aq*	125.00*aq*	255.00*aq*	.....	.....	.....	25.80	35.80	22.40*u*	.....	22.40
New Orleans	160.00	160.00	300.00	.....	.....	.....	29.00	.....	38.00	26.00	37.50
New York	118.20*h*	126.00*h*	173.30*ch*	189.50*hn*	.....	.....	33.00	.....	34.40	26.80	.....
Philadelphia	126.30	134.80	252.60	302.74	361.35	435.74	27.00	30.00	31.00	19.50	24.50
Pittsburgh	98.00	105.80	181.85	202.30	265.35	303.60	26.00	38.00*y*	24.00	19.00	2.97*m*
St. Louis	120.00	135.00	252.00	252.00	339.00	.....	32.50*al*	30.50*al*	.60/.80*aaap*	.90*aaap*	1.00*aaapee*
San Francisco	132.00*a*	148.50*a*	198.00*dda*	148.50*ha*	.....	.....	33.00	.....	25.30	25.30	2.49*m*
Seattle	150.00*ee*	160.00*ee*	.....	160.00*eew*	.....	.....	32.00*a*	39.00*a*	34.00*akk*	34.00*akk*	3.50*mkk*

† F.o.b. yard Roxbury. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 12 in.-3 cell. *d* Pulverized hot. *e* 5% 10th following month. *f* 5½ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *u* F.o.b. warehouse only. *j* Truck load or over. *k* $1.00 discount. *l* Red face. *m* Per bbl., 180 lb. *n* 7½ x 7½ x 12. Speed title. *o* F.o.b. Buffalo. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5½ x 8 x 11½. *u* Tax exempt. *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack. *aa* Price per sack. Lime not sold per ton. *bb* LCL. *cc* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime. *ff* 80% common. *gg* Select. *hh* LCL. *ii* F.o.b. plant. * All load-bearing, non-load-bearing no longer mf'd in Detroit.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry *a*	WHITE LEAD Per 100 lb. in 100 lb. cases In oil *w*	READY-MIXED PAINT Per gal., drums Graphite *b*	Aluminum *c*	Ferric Oxide *d*	ROOFING SUPPLIES Carload lots f.o.b. factory Rolls, slate surfaced, 85-90 lb per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$14.50	$25.325	$1.75	$2.70	$1.65	$2.06‡	$2.06‡	$2.06‡	$1.00‡	$36.00‡
Baltimore	14.25	24.95	2.10	4.27	2.90	2.96	3.94	3.94	.55	36.00
Birmingham	14.50	25.325	3.90	3.40	.....	2.80	2.75	2.75	.....	40.50*ee*
Boston	14.25	24.95	.....	.....	.....	2.68*A*	.....	2.67‡*q*	.38	34.00
Chicago	14.25	24.95	.....	.....	.....	2.34‡*u*	2.54‡*o*	2.54‡*o*	34.00‡*bbs*	37.00‡
Cincinnati	14.25	24.95	2.90	2.90	.....	2.44‡	2.54‡*o*	2.54‡*o*	.35*y*‡	40.80‡
Cleveland	14.25	24.95	2.50*pqq*	2.75*qq*	2.35	2.32	2.41*o*	2.41*o*	.30*y*	32.00
Dallas	14.50	25.70	.....	4.05	.....	3.50*q*	3.75*o*	4.35*o*	.36	46.00
Denver	14.75	25.45	2.63	4.38	2.48	3.20*o*	2.20*o*	2.20*o*	.41*ff*	40.00
Detroit	14.25	24.95	2.35	3.30	2.50	2.20	2.20*f*	2.29	.418	35.00
Kansas City	14.25	25.07	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles	14.25	25.20	2.80	3.75	3.50	2.41	1.91*e*	*l*	.45	*l*
Minneapolis	14.25	25.07 28.55	.....	.....	.....	2.20*add*	2.29*Add*	2.29*Add*	.336*idd*	34.00*r*
Montreal	.....	22.00	3.75*t*	4.20*t*	3.62*t*	3.25*t*	3.00*tf*	3.00*tf*	.750	2.30*tt*
New York	14.25	24.95	3.45*y*	.....	.....	2.32	2.41*o*	2.41*o*	.34*s*	35.00
Philadelphia	14.25	24.95	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	14.25	24.95	2.00	2.00	1.90	2.78	2.81*o*	2.81*o*	.37	38.00
St Louis	14.25	24.95	.....	.....	.....	2.20	2.42*h*	2.42*h*	.46	37.00
San Francisco	14.25	25.20	1.80	2.75*n*	1.35	2.27	3.30*hn*	.....	.38*g*	.....
Seattle	14.25	25.45	2.67*m*	2.67*m*	.....	3.23*mgcc*	3.24*Amcc*	.....	.49*mcc*	48.25*ymc*

‡ Delivered. Note: Red lead in oil 50¢ higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 3-49A. *c* ASTM Spec. D266-31. *d* 80% minimum ferric oxide. *e* 15 lb. *f* Per 432 sq. ft. *h* Per roll. 65 lb. *i* Net carload lot prices; Minneapolis and vicinity. *j* Asphalt pitch. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *n* May, 1941 price. *o* Per 60-lb. *p* 6-drum. *q* Per 90-lb. roll. *r* F.o.b. factory Chicago. *s* ASTM Spec. D266-41. *t* Federal tax included. *u* Per 90 lb. square. *v* Per ton. *w* Price to large paint contractors in $1.25 less. *x* Mineral surfaced. *y* 55-gallon container. *z* Drums. *aa* Approximate cost per 100 lbs. *bb* Roofers costing and cement. Price per ton. *cc* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt, in 100 lb. package. *ff* 5-gal. drums. *gg* F.o.b. factory.

SKILLED AND COMMON WAGE RATES—PER HOUR

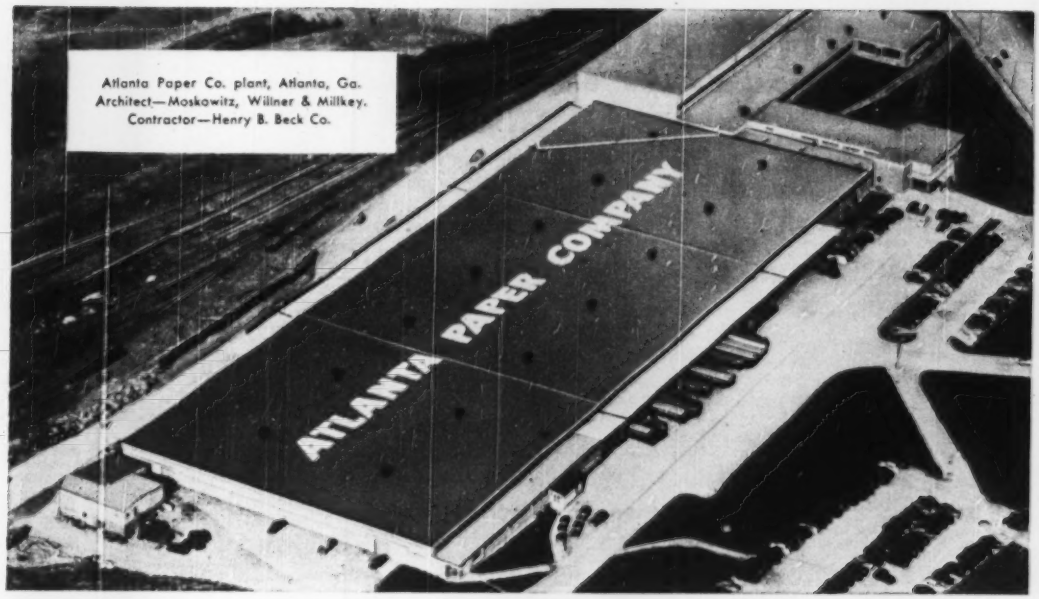
	Bricklayers	Carpenters	Struct Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor— Building	Heavy Const
Atlanta	$2.50	$1.85	$2.125	$2.00	$2.25	$2.25	$2.00	$0.90	$0.95
Baltimore	3.00	2.35	2.65	2.40/2.60	2.50	2.40	2.25	1.25	1.25
Birmingham	2.50	1.90	2.20	1.875	2.20	2.25	2.25	1.00	1.10
Boston	2.625	2.25	2.55	2.60	2.70	2.50	2.45	1.65	1.65
Chicago	2.55	2.45	2.50	2.45	2.55	2.525	2.45	1.80	1.80
Cincinnati	2.575	2.25	2.425	2.375	2.425	2.45	2.40	1.535	1.535
Cleveland	2.70	2.575*d*	2.70	2.70	2.70	2.60	2.70	1.975	1.85
Dallas	2.50†	2.125	2.25	2.25	2.50†	2.375	2.375	1.075	1.275/1.50
Denver	3.00	2.10	2.10	2.25	2.50	2.41	2.40	1.40	1.45
Detroit	2.625	2.325	2.575	2.575	2.625	2.60	2.50	1.675	1.675
Kansas City	2.60	2.15	2.30	2.375	2.75	2.425	2.50	1.575	1.575
Los Angeles	2.625	2.12	2.38	2.07	3.125	2.50	2.50	1.57	1.57
Minneapolis	2.40	2.12	2.275	2.07	2.50	2.35	2.32	1.52	1.52
New Orleans	2.50	1.875	2.25	2.125	2.175	2.30	2.25	1.025	1.025
New York	3.20*b*	2.75*b*	3.00	3.00	3.20*a*	3.00*a*	2.75*b*	1.70	1.70
Philadelphia	3.06*a*	2.34/2.40	2.65	2.50	3.00	2.75 3.00	2.75	1.375	1.675
Pittsburgh	3.00	2.50	2.625	2.65	2.625	2.575	2.50	1.50	1.50
St. Louis	2.833*c*	2.45*h*	2.50	2.55	2.50	2.55*c*	2.50	1.60	1.50/1.75
San Francisco	3.00*a*	2.225	2.50	2.19	3.00	2.50	2.50	1.55	1.55
Seattle	3.00	2.195	2.395	2.33	2.495	2.395	2.50	1.795	1.83
Montreal*	1.40	1.25	1.25	1.20	1.40	1.35	1.35	.90	.80

a 6 hr. day. *b* 7 hr. day. *c* Incl. 3% vacation stamp fund for bricklayers; 2% for electricians. * Cost of living bonus now included in basic wage. *d* Includes 5¢ per hr. tool replacement. † Plus $5.00 daily bonus. *h* $2.20 bonus and housing + 5¢ vacation fund. *i* Incl. 2% welfare.

MEXICO CITY PRICES

In Pesos, F.o.b. City		Feb. '50	Mar. '50
Common Wages—Building (8 hr. day)	av. per hr.	.57	.53
Common Wages—Heavy Const. (8 hr. day)	av. per hr.	.75	.69
Skilled Labor Wages			
Carpenters (8 hr. day)	av. per hr.	1.25	1.88
Bricklayers (8 hr. day)	av. per hr.	1.25	1.50
Struct. Iron Workers (8 hr. day)	av. per hr.	1.50	1.50
Struct. Steel Shapes 3"-15" x 12 meters	per ton	1,050.00	925.25
Reinf. Steel, Corr. Rods			
⅜" x 11 meters	per ton	1,010.00	1,010.00
½" x 11 meters	per ton	1,000.00	1,000.00
⅝" x 11 meters	per ton	980.00	980.00
¾" x 11 meters	per ton	980.00	980.00
⅞" x 11 meters	per ton	980.00	980.00
1" x 11 meters	per ton	980.00	980.00
Gravel, truck load of 3½ cu. meters			
Blue Gravel	per tr. load	30.00	31.00
Rose Gravel	per tr. load	33.00	33.00
Cement, Std. Port. (Tolteca)	per ton	115.00	120.00
Lumber			
Mex. Sawed Fir (Oyamel)	per M ft.	400.00	400.00
1st Class Pine	per M ft.	750.00	750.00
2nd Class Pine	per M ft.	480.00	480.00

ENR Skilled Average: (Bricklayers, Carpenters, Ironworkers) $2.478. **ENR Common Average:** $1.493



Atlanta Paper Co. plant, Atlanta, Ga.
Architect—Moskowitz, Willner & Millkey.
Contractor—Henry B. Beck Co.

"We are 100% sold on all the advantages offered by Kaylo Roof Tile"

—ATLANTA PAPER CO.

The Atlanta Paper Company specified Kaylo Insulating Roof Tile for the 214,000-sq. ft. roof area of its new manufacturing plant. President Arthur L. Harris tells why:

"Kaylo Tile gives us a roof which insulates, won't burn or rot, is lightweight, yet strong.

"Of primary importance to us is the fact that our Kaylo Roof Deck resists water and moisture damage under the high humidity conditions which accompany our manufacturing operations.

"We are 100% sold on all the advantages offered by Kaylo Roof Tile."

Many industrial and commercial firms have found the answer to their roofing needs in Kaylo Insulating Roof Tile—providing a combination of advantages offered by no other single roof-deck material.

WHAT IS KAYLO ROOF TILE?

Kaylo Insulating Roof Tile is made of a lightweight, inorganic material—reinforced with welded wire mesh to provide structural strength more than adequate for typical roof loads.

Each 23-lb. tile is a dimensionally uniform 18" x 36"—can be sawed, cut and nailed with standard tools.

Kaylo Tile is easily laid on steel sub-purlins or nailed to wood joists—on either pitched or flat roofs.

The Kaylo deck may then be covered with any conventional roofing material.

Send Coupon for Kaylo Roof Tile Sample and Literature

KAYLO®

INSULATING ROOF TILE

OWENS-ILLINOIS GLASS COMPANY
Kaylo Division • Toledo 1, Ohio

SALES OFFICES:
Atlanta • Boston • Buffalo • Chicago • Cincinnati • Dallas • Minneapolis
New York • Philadelphia • Pittsburgh • St. Louis • Toledo • Washington

OWENS-ILLINOIS GLASS COMPANY
Kaylo Division, Dept. N-35, Toledo 1, Ohio

Gentlemen: Please send me a Kaylo Roof Tile sample and literature.

NAME.....

FIRM.....

ADDRESS.....

CITY.....STATE.....

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

Md., Towson — B.A. 4/10 — Baltimore Co., Towson, Contr. 211 D. S. & W., (1) 8,765 lin. ft. 12-to 30-in. rein.-con. pipe, 714 lin. ft. 27x43 in. C. M. P. arch for storm drains, (2) 20,200 lin. ft. 6-to 12-in. str. clay sewers and house connections (3) 23,530 lin. ft. 61 to 12-in. c.i. water mains, 2,486 lin. ft. ¾-in. copper tubing, 144 meter vault frames and covers (C. I. P. fire hydrants and copper tubing furnished by owner). Plans deposit $5. Wm. F. Neale, Court House, ch. engr. CD 1/26/44.

Ark., Malvern—B.A. 4/12—Water & Sewer Comn., Malvern, water and sewer extens. Plans deposit $25. Marion L. Crist & Assocs., Union Life Bldg., Little Rock, engrs. CD 9/14/45.

Conn., Middletown—B.A. 4/12—Water Comn., City Hall, 1 m. g. steel standpipe, South Farms Sect. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., engrs. CD 1/29/47.

Pa., West Chester—B.A. 4/12—West Chester Boro. water distr. sys. improvs. $300,000. Albright & Friel, Inc., 121 S. Broad St., Phila., engr. CD 2/3.

Mass., Boston—B.A. 4/13—Commonwealth of Mass., Metropolitan Dist. Comn., Wm T. Morrissey, comr., 20 Somerset St., Water Div., Contr. 165, incl. masonry pump. station. Plans deposit $10. Walter J. Toole, Boston, ch. engr.

Pa., Retreat—B.A. 4/13—General State Auth., 18 and Herr Sts., Harrisburg, construct water distr. and fire protective sys., incl. water lines and fire hydrants, at Retreat State Hospital. $43,000. Plans deposit $2.50. Mark C. Krause, 10 W. 4 St., Williamsport, engr.

O., Cleveland—B.A. 4/15—National Advisory Com. on Aeronautics, Brookpark Rd., circular water piping sys. for propulsion science laboratory. Approx. $100,000. CD 6/20, under Public Buildings.

S. D., Mobridge—B.A. 4/17—City, elevated water tank, $50,000. Julian Staven, Box 508, Rapid City, engr.

Ia., Sac City—B.A. 4/18—City, H. E. Thiessen, clk., water treatment plant, water treatment equip., 21,210 ft. 4- to 8-in. pipe line. Approx. $60,000. Stanley Eng. Co., Hershey Bldg., Muscatine, engr. CD 4/18/46.

Miss., Weir—B.A. 4/18—City, City Hall, WW. sys. Approx. $28,000. Plans deposit $10, Extended date, Donald Mills, Box 534, Selma, Ala., engr. CD 3/13.

N. D., Columbus—B.A. 4/18—City, WW improvs. $60,000. Dakota Eng. & Constr. Co., Valley City, engr.

Wash., Pullman—B.A. 4/18—City, City Hall, 1 m. g. rein.-con. reservoir and trussed rafter type reservoir roof and concrete bearing walls. Approx. $28,000.

O., Mt. Gilead—B.A. about May—City, WW improvs., water treatment plant and force main into village, $110,000. Finkbeiner, Pettis & Strout, 518 Jefferson St., Toledo, engrs. CD 11/11/48.

Tex., Baytown—Bids Asked—Briston-Cravens Lumber Co., Baytown, Sect. 4, c.i. water lines, an extension Britten-Cravens Addn. $35,000.

LOW BIDDERS

Conn., Hartford—Bd. Contr. & Supply of Metropolitan Dist. Water Bureau, 115 Broad St., Mar. 17, 675 tons reinforcing steel deformed bars, Contr. 164, from Ceco Steel Products Corp., New Milford, $68,240. Cd 2/24.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, Mar. 23, water mains, WWI 45, Woodbrook Lane and other locations and water mains WW1468, Willow Grove Ave., etc., from M. & J. B. McHugh, 80; N. Markee St., $84,431 and $91,231 respectively. CD 3/8.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, Mar. 23, water mains, Adams Ave., 467 WWI, from Oxford Constr. Co., Commercial Trust Bldg., $136,894. CD 3/9.

Tex., Katy—City, Mar. 5, WW improvs., storage tank, from Woodruff Constr. Co., 815 Broadway, Houston, $66,218 est. $125,000; water supply well, from Lyvie Texas Co., 5402 Lawndale St., Houston, $31,000. CD 3/8.

CONTRACTS AWARDED

Calif., Alhambra—City Comn., City Hall, 110 ft. diam. and 90 diam. steel water tanks, to Consolidated Western Steel Corp., 5700 S. Eastern Ave., Los Angeles, $150,422. Bids 3/7, awarded 3/21. CD 12/8/44.

Calif., Monrovia—City Council, 301 S. Myrtle Ave., installing water mains in California Ave. between San Gabriel Wills and Duarte Rd., force account. Bids 3/20.

Md., Hyattsville—Washington Suburban Sanitary Comn., Hamilton St., Contr. 672-W, water distr. sys. improv., incl. 39x480 ft. 24 and 30 in. water pipe, alternate bids c.i. and concrete pipe, rein. cylinder or prestressed, Hyattsville, Bladensburg, Defense Heights, Wildercroft and Greenbelt, to Intercounty Constr. Co., 4720 Baltimore Ave., $633,496, Harry R. Hall, 4017 Hamilton St., engr. CD 3/2.

Mich., Battle Creek—City, City Hall, WW., Contr. 12, to P. & M. Constr. Co., Battle Creek, $106,356, Jones, Henry & Schoonmaker, Security Bldg., Toledo, O., engrs. CD 11/30/44.

O., Blanchester—Bd. Pub. Affairs, K. B. Wade, clk., Blanchester, 45 m. gal. water storage reservoir, to Chapman Constr. Co., Jackson, $37,999. Bids 3/3, awarded 3/16.

Pa., Gladwynne—Phila. Suburban Water Co., 762 Lancaster Ave., Bryn Mawr, stand pipe, to Chicago Bridge & Iron Co., 1700 Walnut St., Phila. $100,000.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, water mains, WWI 471, Vine St. at 15 St., to Oxford Constr. Co., Commercial Trust Bldg., $47,173. Bids 3/23. CD 3/9.

Va., Staunton—State Hospital Comn., 9 N. 12 St., Richmond, water sys. for State Hospital, to E. G. Bowles, 1705 Brook Rd., Richmond, $40,668. Wiley & Wilson, Peoples Bank Bldg., Lynchburg, engrs.

Que., Quebec City—Municipality, watermains in De Le Couronne and De Petite Hermine St., and in Route de La Savanne St., day labor, $90,000. Ed. Hamel, City Hall, city engr. CD 9/30/43.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Ga., Gainesville—B.A. 4/11—City, c/o Mayor, Gainesville, sewage pump. station and sewer lines. Plans deposit $25. Robert & Co. Assocs., Inc., 96 Poplar St. N. W., Atlanta, engr.

N. Y., East Meadow—B.A. 4/11—Bd. Supervs., Nassau Co., Old Courthouse, Mineola, sewage treatment works for Meadowbrook Hospital.

Calif., Los Angeles—B.A. 4/12—Los Angeles Sanitary Dist. 2, 1206 S. Maple Ave., 3,200 ft. 78 in. rein.-con. conduit Del Amo and Dominguez Jct. to Long Beach Blvd. and Los Angeles River, Long Beach. Approx. $50,000. A. M. Rawn, dist. engr.

La., Houma—B.A. 4/12—City, City Hall, sewage disposal plant. Plans deposit $20, De Fraities Assocs., 320 E. Main St., engrs. CD 5/24.

N. J., Camden—B.A. 4/12—Purchasing Bd., City, City Hall, Baldwins Run Sewage Treatment Plant, Contr. 4A, general construction; Contr. 4B, electrical work; Contr. 4C, heating and ventilating; Contr. 4D, plumbing, along New Jersey Channel, 32 and Farragut Sts. Plans deposit $25. Havens & Emerson, Wgolworth Bldg., 233 Broadway, New York, 7, N. Y., engrs. CD 8/13/47.

Wis., St. Croix Falls—B.A. 4/12—Village, sewage treatment plant, sewers. Plans deposit $15. Banister Eng. Co., 1549 University Ave., St. Paul, Minn., engr.

Ont., Gravenhurst—B.A. 4/12—G. G. Williams, Town Hall, 13,000 lin. ft. 28 in. sewers. Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, engrs. CD 1/24/44.

Miss., Jackson—B.A. 4/23—City, City Hall, Jackson, sanitary sewers in various streets. Plans deposit $15.

R. I., East Providence—B.A. 4/23—Town, Sewer Comrs., Town Hall, Contr. 1, portion main sewerage sys. for sewage disposal plant. Approx. $50,000. Plans deposit $50. Charles A. Maguire, 1015 Turks Head Bldg., Providence, engr. CD 7/13.

Tex., Fort Worth—B.A. 4/23—City, W. O. Jones, engr., sanitary sewers and laterals in Bigham St. and in part of Ridglea and Alta Mire addns. $207,000. Plans deposit $5. Joe J. Rady, 811 Insurance Bldg., engr. CD 2/4/49.

N. H., Hampton—B.A. 4/14—Town, Sewer Dpt., Town Hall, sewers, various roads. Approx. $50,000. Plans deposit $10. Haley & Ward, 1219 Tremont Bldg., Boston, Mass., engrs. CD 1/27.

O., Toledo—B.A. 4/14—Coms. Lucas Co., Courthouse, No. 1, culvert consisting two lines, 72 in. concrete culvert pipe, removing Bridge 1410 and Bridge 1411, at intersection of Wynn Rd. and Pickle St. $25,712; install approx. 15,782 lin. ft. woven wire guard rail along portion Cousino and Arquette Rd., $28,028. Guy Neeper, county engr. CD 11/2/44.

Ont., Chapleau—B.A. 4/15—J. R. Serre, Town Hall, sewage treatment plant. Plans deposit $25. Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, engrs. CD 3/4/49.

N. D., Columbus—B.A. 4/18—City, sewerage sys. $75,000. Dakota Eng. & Constr. Co., Valley City, engr.

Ga., Atlanta—B. A. 5/3—Fulton Co., c/o county engr., Courthouse, sanitary sewer outfall sewer, Proj's. S-66 and S-67. Plans deposit $15.

SOON LETS CONTRACT

Pa., Phila.—I. S. Towsley, engr., 1428 S. Penn Square, soon lets contract industrial waste treatment plant for Henry Disston & Sons, Inc., Unruh and Minor Sts. Approx. $50,000.

LOW BIDDERS

Calif., Los Angeles—City, Bd. P. Wks., City Hall, Mar. 22, sanitary sewers in Inglewood Blvd. and Herbert St., Contr. Dist., from Chas. T. Brown Co., 1955 6 St., San Fernando, $52,171. Est. $82,280. CD 3/6.

Calif., San Jose—Santa Clara County Sanitation Dist. 2, Courthouse, 57,000 lin. ft. 4- to 15-in. sanitary sewers Res. 33, from A. J. Peters & Son, 534 Stockton Ave., $167,074. CD 3/7.

Calif., South San Francisco—Cities of South San Francisco and San Bruno, City Halls, Mar. 20, altering pumping station, from C. Norman Peterson, 2832 9 St., Berkeley, $57,453. CD 6/14.

Calif., Turlock—City, City Hall, Mar. 21, industrial waste sewage disposal project, incl. pumping and treatment works and outfall sewer lines, from Mincey-nichols, 385 Mandana Blvd., Oakland, $159,965. CD 2/20.

Md., Baltimore—City, Bureau Sewers, 312 Municipal Bldg., Zone 2, Mar. 22, Sanitary Contr. 347, incl. trickling filter distributors, 1,000 cu. yd. excav., 2,000 cu. yd. broken stone, 20 trickling filter distributors, 128 cu. yd. concrete, 1,800 lb. reinforcing steel, 313 tons c.i. pipe and fittings, twenty 14 in. butterfly valves, etc., from John Matricianni Constr. Co., 409 S. Caroline St., Baltimore, $258,606. CD 3/17.

Minn., Onamia—Village, W. A. Lipetzky, clk., Mar. 20, sanitary sewerage sys., sewerage treatment plant, from Phelps-Drake Co., 1415 S.E. 8 St., Minneapolis, $268,197. CD 2/24.

O., Akron—City, City Hall, Mar. 20, sewage disposal plant, Botzum Plant sect., from Deluca Constr. Co., 1055 Grant St., $856,255. CD 5/9.

▲ O., Canton—Dep. City Hall, Mar. 22, sewage treatment plant and garbage disposal, from Bass Eng. & Constr. Co., 215 Birmingham Theatre Bldg., Birmingham, Mich., Contr. 1, $2,032,750***from Dorr Co., 221 La Salle St., Chicago, Ill., Contr. 2, Sect. E, $148,420***from Worthington-Pump & Mchy. Corp., 400 W. Madison St., Chicago, Ill., Contr. 3, Sect. A, $50,600***from Deluca Constr., 1055 Grant St., Akron, Contr. 4, Sect. 1, $327,300; Sect. 3, (all 3 sections) A $115,257, B $122,000, C $105,200***from P. J. E. Bickells, Lincoln Way east, Massillon, Contr. 4, Sect. 2, $213,575. Alord Burdick & Howson, 1401 N. Wacker Dr., Chicago, Ill., consult. engrs.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, intercepting sewer, Wooden Bridge Run, from James D. Morrissey, 9114 Frankford Ave., $69,913; Central Schuylkill pumping station superstructure from Laub Constr. Co., 1518 Walnut St., $149,530. A. Zane Hammer, c/o owner, ch. engr. CD 3/25/46 and CD 5/13/48, under I-B.

Tex., Brackettville—City, Mar. 20, sanitary sewer collection sys., Bid C, from McKenzie Constr. Co., 435 E. Mitchell St., San Antonio, $98,592. Est. $200,000. CD 3/2.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

*	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

Tex., Dickinson—Galveston County Water Control & Imprvt. Dist. 1, A. J. Dies, Dickinson, Mar. 25, lift station, sewage treatment plant, lines from Gerald Mora, 312 Sabine St., Houston. $62,766. Est. $60,000. CD 2/23.

Tex., Houston—City, City Hall, 900 Brazos St., Mar. 15, 48 in. sanitary sewer trunk line along Outer Belt Dr. and Holcombe Blvd. from Bishop Constr. Co., 5304 Old Spanish Trail. $69,490. Est. $85,000. H. E. White, 510 Eleanor St., engr. J. M. Nagle, city engr.

Wash., Tacoma—City, City Hall, sanitary sewers in area bounded by S. Tacoma Way, 45 St., Prospect St. and M St., from Valley Constr. Co., 7708 Rainier Ave., Seattle. $83,877. CD 11/14.

Ont., Toronto—City, H. E. McCallum, mayor, sewer in Jones Ave., from Diles & Co., 239 Bellwoods Ave., Approx. $50,000. M. Stewart, c/o owner, engr. CD 8/10/44.

CONTRACTS AWARDED

Ala., Montgomery—City, City Hall, sanitary outfall and lateral sewers, to Vandigriff Constr. Co., 4708 N. Court St., $199,489. CD 2/24.

Calif., Santa Barbara—City Council, East and West Cabrillo Blvd., sanitary sewer from Cantillo St. to Eastside Pumping Plant, to Charles J. Dorfman, 124 N. La Brea Ave., Los Angeles. $50,465. Bids 3/9, awarded 3/16.

Ill., Chicago—Sanitary Dist. of Chicago, 910 S. Michigan St., Contr. 10, Upper Des Plaines Intercepting Sewers, 20,700 ft., 42 in. and 5 ft. concrete pipe, in River Grove, Melrose Park, Stone Park and North Lake Cities, Leyden and Proviso Twps., to Kenny Constr. Co., 111 W. Washington St., $748,646. Bids 3/2. CD 3/7, under LB.

La., Opelousas—City, City Hall, 31,085 lin. ft. 8-to 12-in. sewer main, 81 manholes, etc. Sewer Distrs. 5 and 6, to Magnolia Constr. Co., P. O. Box 1975, Baton Rouge. $70,871. Bids 3/21. CD 3/2.

Ore., Coquille—City, City Hall, 3 mi. 6- to 15-in. sewer, to Inter-City Sand & Gravel Co., Eugene. $51,006. Bids 3/20. Awarded 3/20. CD 3/3.

Va., Staunton—State Hospital Comn., 9 N. 12 St., Richmond, sewerage sys. at State Hospital, to Continental Constr. Co., 1539 Race St., Phila., Pa. $225,-170. Wiley & Wilson, Peoples Bank Bldg., Lynchburg, engrs.

Que., Quebec City—Municipality, sewer in de La Savane St., $50,000, and sewer in De La Ronde and Vitre Sts. $70,000, day labor, Ed Hamel, City Hal, city engr. CD 12/27/45.

BRIDGES

BIDS ASKED

N. J., Bridgeton—B.A. 4/10—Bd. Freeholders, Cumberland Co., Bridgeton, Commerce Street Bridge. Bids 5/10 rejected. Edward H. Maier, co. engr. CD 5/13, under LB.

N. Y., Atlantic Beach—B.A. 4/13—Nassau County Bridge Auth., Old County Courthouse, Franklin Ave., Mineola, construct Atlantic Beach Bridge over Reynolds Channel between Lawrence and Atlantic Beach. Plans reposit $50. Hardesty & Hanover, 101 Park Ave., New York, consult. engrs. CD 5/16/45.

New Jersey—B. A. 4/28—New Jersey Turnpike Auth., War Memorial Bldg., Trenton.

Mercer and Middlesex Counties—Contr. 21, 17 steel, concrete structures in connection with new highway between Allentown and Prospect Plains. CD 7/13, under Streets and Roads.

† Alaska—B.A. 5/4—Alaska Road Comn., Juneau, 300 ft. high truss span over Matanuska River at Mile 46.7 on Glenn Hy.; with 50 ft. I-beam approach span; 100 ft. low truss span over Peters Creek at Mile 21 on Glenn Hy.; 80 ft. I-beam span over Talkeetna Creek at Mile 172.6 on Glenn Hy.; 225 ft. high truss span over Gakona River at Mile 1.8 on Tok Hy.; 150 ft. high truss span over Shaw Creek at Mile 284.7 on Richardson Hy. Plans deposit $10. A. F. Ghiglione, c/o owner, ch. engr.

Wis., South Milwaukee—B. A. 5/11—City, 2 reinf.-con., limestone faced bridges. $80,000. Plans deposit $5. R. W. Nicholson, city engr.

LOW BIDDERS

Fla., Miami—Dade Co., Courthouse, Mar. 21, bascule bridge on S.E. 4 Avenue over Miami Canal, from Joseph G. Moretti, Inc., 2401 N.W. 7 St. $515,852. CD 2/15.

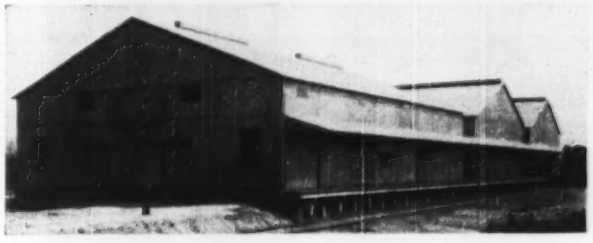
▲ New Jersey—New Jersey Turnpike Auth., War Memorial Bldg., Trenton, Contr. 14, 20 piers, one abutment and foundations for south approach and 23 piers, one abutment and foundations for north approach of Passaic River Bridge structure, Hudson and Essex Counties, from George M. Brewster & Son, Inc., 275 W. Fort Lee Rd., Bogota. $3,855,960. CD 3/7.

Pennsylvania—State Hy. Dpt., Harrisburg, Mar. 24, reconstruct steel, concrete bridge over Connoquessing Creek and tracks of Baltimore & Ohio R.R. and Bessemer & Lake Erie R.R. and incidental work, 1,199 ft., L.R. 72 (R-3), T.R. 8, Butler Co., from Conn Welding & Machine Co., 108 Croton Ave., New Castle. $112,708. CD 3/1.

Wash., Seattle—King Co., County-City Bldg., Zone 4, Mar. 20, redecking, imprv. to 14 Ave. S. Bridge over Duwamish waterway, from E. E. Settergren, Henry Bldg., Portland, Ore. $85,260. CD 3/7.

Prompt Delivery on

STEEL BUILDINGS



One of the many industrial steel buildings made by Allied Steel

• *Custom Built* • *Insulated if Desired*

- Structural Steel Fabrication
- Gratings
- Ladders
- Platforms
- Safety Cages
- Ventilators

Allied Steel is in a position at the present time to furnish *prompt delivery* on Steel Buildings, Structural Steel Fabrication and Steel Accessories.

Allied will completely engineer your special building requirements from analysis of your need to placing the last piece of steel.

Allied buildings can be furnished insulated; they are flexible, can be lengthened or shortened; afford nearly 100 percent salvage; are portable; have low initial investment and low cost maintenance; are fire resistant and weathertight.

ALLIED STEEL

WRITE FOR ALLIED'S CATALOG

ALLIED STEEL PRODUCTS CORP.

2112 North Lewis Ave. Tulsa, Oklahoma

"Gunite" ..... the sand-cement product of the "CEMENT GUN," for Concrete and Masonry Repairs, Pre-Stressed Tanks, Steel Encasement and for lining Reservoirs, Sewers and Tunnels.

CEMENT GUN COMPANY

"GUNITE" CONTRACTORS

GENERAL OFFICES—ALLENTOWN, PENNA. U.S.A.

MANUFACTURERS OF THE "CEMENT GUN"

Preferred for **PEAK PERFORMANCE**

15 TO 30 H.P.

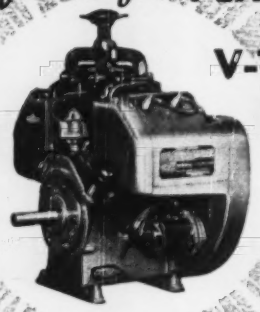
V-Type Four-Cylinder

WISCONSIN

HEAVY-DUTY

Air-Cooled

ENGINES



Model VE 4, V-type 4-cylinder standard engine 71.3 hp. at 2400 rpm.

On power jobs that call for rugged serviceability and sustained operation in the 15 to 30 hp. range, Wisconsin 4-cylinder engines rate first preference on the basis of such features as:

Trouble-free Air-Cooling at all temperatures from sub-zero to tropical highs; tapered roller bearings at BOTH ends of the extended crankshaft to take up all thrust and radial loads (also inherently self-cleaning); rotary type, high tension OUTSIDE Magneto equipped with Impulse Coupling for quick starting in any weather and sure firing on the job; individual oil stream to each connecting rod (other parts lubricated by oil spray) assuring complete and thorough lubrication at all times.

V-type design permits a shorter crankshaft and less height than with a "straight-in-line" engine, assuring a more compact power unit.

4-cycle single cylinder models, 3 to 9 hp., and 2-cylinder models, 7 to 13 hp., also available. Detailed data on request.

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 14, WISCONSIN

***Free* to ENGINEERS**

10,000 engineers and architects use "Typical Designs of Timber Structures" in designing industrial and recreational buildings, churches, and other light and heavy frame structures.

The book features 88 new typical lumber designs based on the National Design Specification published by the National Lumber Manufacturers Association.

Send us this ad clipped to your letterhead for your FREE copy of these modern typical designs for wood construction, and a chrome-plated Split Ring paper weight.

TIMBER ENGINEERING COMPANY

WASHINGTON 6, D. C.

"Gunite" *Florida Service, Inc.*

air-applied concrete specialists

4063 Ponce de Leon Blvd. Coral Gables, Fla.

- Repair all types Disintegrated Concrete
- Dam Reconstruction and repairs
- Linings and repairs for Reservoirs, Stacks, Bunkers, Sewers, Tanks, Tunnels, Pen Stocks
- Structural Steel Encasements
- Restoration of Masonry Structures

All work under the supervision of Harvey M. and Victor S. Anderson, using the latest equipment.

Work executed anywhere in the U. S. A. and Latin America

Write for our new illustrated brochure!

DREDGES

HYDRAULIC

● DIPPER ●

CLAMSHELL

Bolted sectional steel hulls for landlocked, inland waters

If you need a dredge, write us!

AMERICAN STEEL DREDGE CO. INC.

FORT WAYNE 1 - INDIANA - U.S.A.

DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905

CONTRACTS AWARDED

Massachusetts—Commonwealth of Mass., Dpt. P. Wes., Boston, 2 steel stringer bridges, Sullivan Square over Boston & Maine and Boston & Albany R. R., U-141 (2), Contr. B. Boston and Somerville, to Wescott Constr. Co., 52 N. Washington St., North Attleboro, $646,167. Bids 2/28, awarded 3/14, CD 3/8, under LB.

Pennsylvania—State Hy. & Bridge Auth., Harrisburg, Schedule 2, one plate girder bridge to carry Schuylkill Expressway (Philadelphia Access Road for Pennsylvania Turnpike) over Phila. and Western R.R., Gulph Creek and Route 23, Montgomery Co., to Francis A. Caruso & Sons, 804 S. 12 St., Phila., $772,361. Bids 3/3, awarded 3/15, CD 3/7, under LB.

▲ Washington—State Hy. Dpt., Olympia, bridge over Snake River, Pasco, Franklin Co., to General Constr. Co., 3840 Iowa St., Seattle, $1,244,545. Bids 3/21, CD 3/2.

Washington—State Hy. Dpt., Olympia, steel truss bridge with steel girder approaches and rein.-con. girder bridge on 0.115 mi. Primary State Hy. 9 over Humptulips River and overflow, F.A.P.-007-1 (2), Grays Harbor Co., to Sealand Constr. Co., Inc., 511 Valley St., Seattle, $235,748. Bids 3/21, CD 3/8.

Ont., Sombra—Sombra Twp. Council, Reeve Gordon Branton, Sombra, 180 ft. span steel, concrete bridge, 20 ft. wide, to Sarnia Bridge Co., Sarnia; substructure, to Waitham & Fuller, Kerwood. Approx. $60,000.

STREETS AND ROADS

BIDS ASKED

Fla., Jacksonville—B.A. 4/11—Bd. Comrs. Duval, Court House, Zone 2, paving parts of 39 roads, $300,000. Arthur Sollee, co. engr.

Calif., Davis—B. A. 4/14—Bd. Regents University of California, Berkeley, West Street Developments, Units 3 and 4, Davis Campus. Plans deposit $25.

Ont., Waterloo—B.A. 4/17—City, P. G. Given, clk., resurf. 70,000 sq. yd. roadway. Approx. $125,000.

New Jersey—B. A. 4/18—New Jersey Turnpike Autn., War Memorial Bldg., Trenton.

Bergen Co.—Contr. 18, grading, drainage 3.8 mi. new superhighway from Wiegands Lane in Secaucus to bridge over New York, Susquehanna & Western R. R. yards in Ridgefield, etc. CD 7/13.

† N. M., Los Alamos—B.A. 4/19—U. S. Atomic Energy Comm., Los Alamos, 4 mi. new highway from Los Alamos Canyon to State Hy. 4, 2 in. hot mix, 6 conc. on 8 in. grav. pavement, 24 ft. wide, 8 ft. shoulders both sides, incl. clearing, grading, drainage, Inv. No. 291-50-72. $80,000.

La., Welsh—B.A. 4/20—Town, Town Hall, street imprvs., $210,000. Porter, Barry & Switzer, 545 Lafayette St., Baton Rouge, engrs. CD 1/27.

▲ Tex., El Paso—B. A. About 4/25—U. S. Eng., P. O. Box 1538, Albuquerque, N. M., perimeter sidewalk and driveways, Fort Bliss, Serial No. Eng 29-005-50-41.

† Okinawa, Ryukyus Islands—B.A. between June 1950 and June 1951—U. S. Eng., APO 331, San Francisco, Calif., approx. 20 mi. primary roads.

LOW BIDDERS

† California—Bureau Public Roads, Dpt. Commerce, 180 New Montgomery St., San Francisco, Mar. 21, hy. imprvt., 2.114 mi. Calif. Hy. 63-C, Swartout, Angeles National Forest, Proj. 63-C, Los Angeles Co., from Wonderly Constr. Co., 2694 Lime Ave., Long Beach, $203,300. CD 3/3.

California—State Div. Hys., Sacramento, Mar. 22, plant mix on cement treated surf. 6.7 mi. between Klamath River Bridge and Wilson Creek, Del Norte Co., from Harms Bros. & C. M. Syar, 5262 Stockton Blvd., Sacramento, $247,331***plant mix on cement treated surf. 5.2 mi. between 1 mi. south Orick and 2 mi. south of Del Norte Co. line, Humboldt Co., from Mercer Fraser Co., and Commercial Sts., Eureka, $199,803***plant mix surf. over cement treated imported borrow, existing pavement 4.2 mi. between Route 125 and Kern Co. line, San Luis Obispo Co., from Granite Constr. Co., Box 900, Watsonville, $98,457***plant mix on untreated rock surf. 11.2 mi. between junction with Rt. 109 and 1 mi. east of Oakdale, Stanislaus Co., from Munn & Perkins, 516 River Rd., Modesto, $197,800***plant mix surf., apply seal coat 8.1 mi. between Visalia and Vendia Substation, Tulare Co., from Griffith Co., 1060 S. Broadway, Los Angeles, $97,530. CD 2/28.

Calif., Los Angeles—B. Supervs. Los Angeles Co., 501 Hall of Records, Mar. 21, imprv. Arrow Hy. and Bonita Ave. between Longden Ave. and Azusa Canyon Rd., C. C. 0-651, Baldwin Park, from Griffith Co., 1060 S. Broadway, $164,916. CD 3/1.

Calif., San Mateo—City, City Hall, Mar. 20, imprv. Alameda de Las Pulgas, Proj. 1, Req. 49-9c, from Lowrie Paving Co., 1755 Evans Ave., San Francisco, $147,333.

Colorado—State Hy. Dpt., Denver, Mar. 14, oil processing 2.293 mi. relocation S.H. 185 from point at intersection of Acoma St. and north city limits of Denver and exten. north to intersection of Sh 582 near Denver, Colo. Proj. FI-FGI 002-1 (3) Adams Co., from Gardner Constr. Co., Glenwood Springs, $302,352, est. $390,658***grav. 4.004 mi. State Hy. 86 between Kiowa and Elizabeth Co., Proj. S. 0026 (2) Elbert Co., from Leone Constr. Co., Trinidad, $49,791, est. $69,781***grading, surf., structures, 23.09 mi. between Rangeley and Meter State Hy. 64 Colo. Proj. S 0144 (7) Rio Blanco Co., from Northwestern Eng. Co., 6000 Colorado Blvd., Denver, $296,995, est. $346,298. CD 3/7.

Kentucky—State Dpt. Hy., Frankfort, Mar. 20, from R. B. Tyler Co., 1446 Levering St., Louisville traffic bound limestone 5.27 mi. Lewisburg-Rochester Rd., Proj. S 357 (2); S. P. 16-356, Butler Co., $79,184; reconstr. and traffic bound limestone surf. 5.27 mi. Union-Silver City Rd., Proj. RS 16-416 and RS 16-456, combined Butler Co.; $66,296, bit. surf. Class C-1, 9.406 mi., Barbourville-Artemus Rd., Proj. SP 61-130, Knox Co., $82,449***from Breslin Constr. Co., 1801 S. Brook St., Louisville, bit. surf. Class F, 10.691 mi., Waggoners Store-Little Sandy Rd., Proj. 288 (4); SP 32-69 & 103-62, Elliott and Rowan Counties, $171,178; bit. surf. class F, 11.67 mi. SP Group 18 (1950) Morgan Co., $61,795*** from Geoghegan & Mathis, Bardstown, bit. surf. Class C-1 and A-2 seal, 10.175 mi. Fordsville-Leitchfield Rd., Proj. S 462 (3), SP 92-44, Ohio Co., $114,056***from Gay-Coleman Constr. Co., 113 Cheapside St., Lexington, bit. surf. Class F, 7.176 mi., Booneville-Conkling-Manchester Rd., Proj. S 332 (5), SP 95-56, Owsley Co., $132,352; bit. surf. Class F, 9.406 mi. Barbourville-Artemus Rd., Proj. SP 61-130, Knox Co., $85,642***from Allen-Codell, Inc., Winchester, bit. surf., Class C-1 and A-2 seal, 7.176 mi., Booneville-Conkling-Manchester Rd., Proj. S 332 (5), SP 95-56, Owsley Co., $121,653***from Paul A. Teegarden, Columbus, Ind., bit. surf. Class C-1, 10.294 mi. Central City-Madisonville Rd., Proj. SP 89-223, Muhlenberg Co., $113,010; bit. surf. Class I, same road, $117,240***from Ballard & Hamilton, Bardstown, local bank or creek grav. 5.235 mi. Freedom-Etoile Rd., Proj. RS (5-412), Barren Co., $54,272; Local bank or creek grav. 3.115 mi. Hardin Co. River Rd., Proj. RS 47-499, Hardin Co., $50,872***from Arnett Constr. Co., Berea, traffic bound limestone and reconstr. 11.147 mi. New Cut Rd., Proj. RS (4) 5-421, 473, Barren Co., combined $91,866, traffic bound limestone 11.679 mi. Lusby's Mill-Hesler Rd., Proj. RS 93-373 and RS 94-393 Owen Co., combined $69,185; traffic bound limestone and reconstr. 4.036 mi. Shopville-Bent Rd., Proj. RS 100-695, Pulaski Co., $50,547*** from Tye & Wells Co., Carrollton, traffic bound limestone and reconstr. 5.335 mi., Goose Creek-Warren Chapel Rd., Proj. RS 21-232, Carroll Co., $70,927 ***from I. H. Hardin Crushed Stone Co., Bedford, local bank or creek gray. 5.325 mi. Goose Creed-Marvin Chapel Rd., Proj. RS 21-232, Carroll Co., $69,564***from Traylor Bros., Inc., Mt. Vernon Rd., Evansville, Ind., c. conc. 0.227 mi. The Paducah Belt Line Rd. and underpass and approaches at intersection of Jackson St. and P. & L. R. R., in Paducah, (4) 5-A (7), SP 73-332, McCracken Co., $128,937*** from R. E. Gaddie Inc., Bowling Green, bit. surf., Class C-1 and A-2 Seal, 10.142 mi. Russell Springs-Old Olga Rd., Proj. SP 104-138, Russell Co., $54,769. CD 3/7.

▲ Massachusetts—Commonwealth of Mass., 100 Nashua St., Boston, Mar. 14, state hy. and bridge constr., Rte 15, Stubridge, from White Oaks Excavation, Inc., 61 E. Main St., Plainville, Conn., $1,386,405. CD 3/16.

Mass., Worcester—City, City Hall, Mar. 20, street constr., Ashmore Rd., Arletta Ave., Atwater Ct., Blaine Ave., Belvidere Ave., Greybert Lane, Goldthwait Rd., from Worcester Constr. Co., 9 Creston St., $62,312.

N. J., Atlantic City—Bd. Freeholders Atlantic Co., Guarantee Trust Bldg., Mar. 31, surf. retreatment various roads, from Union Building & Constr. Co., 631 Main Ave., Passaic, $111,938. CD 3/24.

N. J., Trenton—City, repaving Bauintuck Ave., from Kingston Trap Rock Co., Kingston, $80,080. Joseph E. Englis, city engr.

N. J., Trenton—City, repaving Second St., from Union Paving Co., New York Ave., $78,437. CD 8/27/48.

† Oklahoma—U. S. Eng., Box 61, Tulsa, Mar. 21, reconstruction Hy. 99, also riprapping, channel grubbing, drainage structures, from D. F. Allen, Henryetta, $317,180. Est. $175,000. C 3/14.

Pennsylvania—State Hy. Dpt., Harrisburg, Mar. 24, widn. pavement left and right with c. conc. pavement 2 ft. in width incl. construction of rein.-con. box, widn. existing pavement left and right with plain c. conc. base 2 ft. in width and bit. surf. new top and existing pavement 22 ft. wide, 17.922 ft., L.R. 247 (8) T.R. 88, from the Allegheny-Washington Co. line, north, Allegheny Co., from Allegheny Asphalt & Paving Co., Inc., 801 Bingham St., Pittsburgh, $148,970***crushed stone base with bit. surf., 24 ft. wide, widn. pavement on left and right with plain c. conc. base 4 ft. wide bit. surf., new base and existing pavement 24 ft. wide, incl. extens. to on existing structures 5,200 ft., L.R. 250 (5), T.R. 24, from approx. 4½ mi. south of the Boro of New Cumberland to point 2.6 mi. north of village of Bowmans, York Co., from Hempt Bros., Camp Hill, $89,814***crushed aggregate base with bit. surf., 24 ft. wide, incl. extens. to existing structure, widn. left and right of pavement with crushed aggregate base 2 ft. in width; build-up of existing pavement with crushed aggregate base 1e ft. wide and surf. new base widn. and build up with bit. surf. 20 ft. wide, bit. surf. existing pavement 20 ft. wide and extens. to and existing bridge, widn. left and right of existing pavement with crushed aggregate base and of plain c. conc. base 2 ft. in width and surf. new base widn. and existing pavement with bit. surf. 20 ft. wide, incl. repairing existing bridge and exten. existing structure, widn. left and right of existing pavement with crushed aggregate base 2 ft. wide, build-up of the existing pavement with crushed aggregate base and surf. new base widn. and build-up with bit. surf. 20 ft. wide; construct crushed aggregate base with bit. surf. 20 ft. wide and bit. surf. existing bridge floors, 48,063 ft., L. R. 233 (8R-78), T. R. 108, from point 1.09 mi. east of New Castle to point 0.4 mi. east of Butler Co. line, Lawrence Co., from Smith Constr. Co. of Ohio, 1936 Glenwood Ave., Youngstown, O., $489,627. CD 3/1.

▲ Texas—State Hy. Comn., Austin, Mar. 15, hot mix & conc. 15.666 mi. Hy. U. S. 87, C. 70-2-8, Tom Green Co. and hot mix & conc. 7.712 mi. Hy. St. 183, U. S. 80 and Loop 12, C. 94-3-11, Dallas and Kaufman Counties, from Southwest General Constr. Co., The Argle, Oak Lawn at Hall St., Dallas, $117,406 and $93,626, est. $126,000 respectively***flexible base, b. conc. 18.256 mi. Hy. U. S. 59 and St. 44, F. 424 (16), (17), (18), Jim Wells and Nueces Counties, from J. M. Dellinger, Inc., 2425 Leopard St., Corpus Christi, $280,672, est. $220,000***seal coat 141.092 mi. Hy. SH 290, 137, 124, 137, U. S. 180 and U. S. 380, C. 130-1-7, etc., Cochran, Hockley, Dawson, Lynn, Garza and Gaines Counties, from Warren & Purtell, Inc., P. O. Box 1019, Lubbock, $119,903, est. $115,000***flexible base, one course surf. tr. 10.253 mi. Hy. FM 138, S. 247 (2), Shelby Co., and flexible base, prime coat and one course surf. tr. 14.055 mi. Hy. FM 840, S. 1472, Rusk Co., from H. R. Henderson & Co., Marshall, $120,853, est. $118,000 and $65,126, est. $68,000 respect.vely, storm sewers, Hy. U. S. 90, FI 56 (3), Jefferson Co., from Trott & Thomson, Inc., P. O. Box 70, Beaumont, $534,573, est. $415,000***flexible base, two course surf. tr. 16.306 mi. Hy. F. 1471, 651, 1472 and 1470, V. 1145-1-1, Crosby Co. and stabil. fdn. course and two course surf. tr. 15.941 mi. Hy. FM 1066, 1067, 1312, S. 1460 (1) and S. 1461 (1), Gaines Co., from J. R. Fanning, 1712 13 St., Lubbock, $111,568, est. $114,000 and $95,347 respectively***flexible base, one course surf. tr. 9.865 mi. Hy. FM 1423, S. 1486, Hidalgo Co., from E. B. Darby & Co., Pharr, $82,910***flexible base, one course surf. tr. 8.599 mi. Hy. FM 1010, S. 1325 (1), Liberty Co., from Campbell & Kay, P. O. Box 636, Tyler, $124,599***soil asph. base and one course surf. tr. 7.946 mi. Hy. FM 1126, S. 1340 (1), Navarro Co., from E. W. Hable & Sons, Corsicana, $109,649, est. $116,000***flexible base, single asph. surf. tr. 5.089 mi. Hy. St. 101, S. 218 (6), Mitchell Co., from Campbell & Kay, 2854 Berry St., Fort Worth, $80,833, est. $72,000.

stabil. base fdn. course and one course surf. tr. 6.305 mi. Hy. FM 878, V. 596-A-1, Ellis Co., from John T. Leslie, Waxahachie, $64,047, est. $73,000*** flexible base, one course surf. tr. 7.866 mi. Hy. FM 951 and FM 443, S. 1200 (1) and S. 1005 (2), De Witt and Gonzales Counties, from M-J Constr. Co., Beeville, $59,598***flexible base, one course surf. tr. 14.178 mi. Hy. FM 994 and FM 995, S. 1204 (1) and S. 1205 (1), Cass Co. and flexible base, one course surf. tr. 6.565 mi. Hy. FM 1002, S. 1423, Upshur Co. from Spencer Const. Co., Carrollton, $135,402 and $68,255, est. $80,000 respectively*** soil asph. stabil. and one course surf. tr. 7.572 mi. Hy. FM 987, S. 1259 (1), Kaufman Co., from Austin Bridge Co. and Austin Constr. Co., P. O. Box 1540, Dallas, $114,538***flexible base, one course surf. tr. 10.159 mi. Hy. FM 1062, Randall Co., from Bell, Braden, Barker & Gilvin, Inc., Herring Hotel Bldg., Amarillo, $62,397, est. $72,000***cancelled bids to have been opened Mar. 15, c. conc. paving and Main Street viaduct 0.5 mi., S. 80, F. 439 (19), El Paso Co. CD 2/28 and 3/1.

▲† Alaska—Alaska Road Comm., Federal and Territorial Bldg., Juneau, Mar. 20, grading, surf. 48 mi. Richardson Hy., to Lytle & Green Constr. Co., 312 Masonic Temple Bldg., Des Moines, Ia., $2,339,810. Est. $2,776,860. CD 3/2.

CONTRACTS AWARDED

▲ Washington—State Hy. Dpt., Olympia, grading, draining, surf. 5.01 mi. Secondary State Hy. S-K, Pomeroy to Mt. Misery, State Proj. Garfield Co., to Sither & Son, P. O. Box 147, Spokane, $122,413***surfacing, stockpiling constr. guard rail 15.476 mi. Secondary State Hy. F, Oda-Tenth State Proj. Grant Co., to Curtis Gravel Co., P. O. Box 106, Spokane, $341,965 ***widn., b. conc. surf. 2.749 mi. Primary State Hy. 1, Riverton Hill to Seattle city limits, State Proj. King Co., to D. & H. Paving Co., Vancouver, $239,361***clearing, grading, draining, surf., constr. rein.-con. flat slab bridge 2,491 mi. Primary State Hy. 9-B, Lilliwaup to Deming, State F.A. P. F. 9-B (10), Mason Co., to Northwest Constr. Co., 3950 e. Ave. N. W., Seattle, $288,327***b. conc. resurf. 1.471 mi. Primary State Hys. 2 and 3 Latah Creek to Washington St. in Spokane, State Proj. Spokane Co., to Inland Asphalt Co., 10 and Havana Sts., Spokane, $58,353***grading, draining, surf., constr. rein.-con. grader overcrossing 0.073 mi. Sprague Co., Rd. Cheney to Spangle Rd., F.A.S. S.-0463 (3), and SG 0463 (2), Spokane Co., to Clifton & Applegate, Box 1473, Spokane, $58,925. Grand total $1,109,344. Bids 3/21. CD 3/8.

EARTHWORK, WATERWAYS

BIDS ASKED

Ia., Davenport—B.A. 4/11—Davenport Levee Improv. Comm., City Hall, constr. 4,000 ft. wall along Mississippi River, incl. approx. 23,000 cu. yd. excav. and 4,600 cu. yd. concrete, Romine, Sindt & Snow, 319 Union Arcade Bldg., engrs. CD 8/24.

† California—B.A. 4/27—Bureau Reclamation, Dpt. Interior, Goleta, Calif., concrete pipe lines and structures South Coast conduit, Station 0 plus 38.97 to Station 641 plus 00 and Glen Anne Wasteway, Spec. 2957, steel pipe line and concrete structures, South Coast conduit, Station 0 plus 38.97 to Station 641 plus 00 and concrete pipe line and structures, Glen Anne Wasteway, Spec. 2958, both Santa Barbara Proj., in vicinity of Santa Barbara, L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr. 4/20/45.

† Illinois—B.R. 472—U. S. Eng., 830 W. Broadway, Louisville 3, Ky., flood protection works, Rosiclare, Serial No. CIVENG 15-029-50-85.

CONTRACTS AWARDED

† Colorado—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, tunnel to bypass collapsed section of Tunnel 3 in Grand Valley Proj. on Western Slope, near Grand Junction, Mesa Co., to Grafe-Callahan Constr. Co., Rio Grande Bldg., Dallas, Tex., and Rhoades Bros. & Shofner, 3865 Medford St., Los Angeles, Calif., $609,800. Bids 3/17. L. N. McClellan, ch. engr.

▲† Washington—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, design, mfg. and delivery of first ten 100,000 hp. hydraulic turbines for Chief Joseph Dam, Bridgeport, Inc., 50-44, to Newport News Shipbuilding & Drydock Co., Newport News, Va., $6,220,300. Bids 2/10. CD 2/17, under LB.

AIRPORTS

CONTRACTS AWARDED

† O., Cleveland—GAS FIRED AIR HEATERS—National Advisory Committee on Aeronautics, Brookpark Rd., furnish install 2 gas fired air heaters to heat compressed air to 650 degrees, to Petro-Chem. Development Co., 120 E. 41 St., New York, N. Y., $160,800. Est. $50,000. Bids 12/22. CD 12/16.

PUBLIC BUILDINGS

BIDS ASKED

Tex., Freeport—SCHOOL—B.A. 4/13—Brazosport Independent School Dist., Freeport, 21,500 sq. ft. reinf.-con. footings fdn., steel school, music bldg. Approx. $250,000. Plans deposit $25, Emery S. White, 922 M & M Bldg., Houston, archt. Dale S. Cooper, 420 Sul Ross Ave., Houston, engr. CD 10/4, 48.

Ia., Denison—POWER PLANT COOLING TOWER BASIN—B.A. 4/17—Bd. Trustee, Municipal Electric Light & Power Plant, Denison, Item 1, 2 rein.-con. cooling tower basin incl. piping appurtenances, Lutz & May, 619 Finance Bldg., Kansas City, Mo., engrs. CD 3/15.

▲ Wash., Kennewick—SCHOOL—B.A. 4/18—School Dist. 17, Kennewick, 301x55 ft. and 415x525 ft. rein.-con. high school, $2,000,000. Plans deposit $25, E. W. Morrison Assocs., 719 2 Ave., Seattle, archts. CD 3/3.

N. Y., Brooklyn—HOUSING—B.A. 5/2—New York City Housing Auth., 63 Park Row, New York, Zone 7, foundations and general constr., heating and ventilating; electrical work; and plumbing for Sect. 11, incl. Buildings 1 to 5 (inclusive) of Farragut Houses Proj. No. NYS-2, in the area bounded by Nassau, Gold, Sands and Navy Sts. Plans deposit $75. CD 5/10/46.

Fla., St. Petersburg—HOSPITAL—B.A. 5/15—At office Ross E. Windom, city mgr., City Hall, New Mount Park Hospital. Plans deposit $50. Extended date, CD 2/9.

LOW BIDDERS

Ill., Harrisburg—GYMNASIUM and VOCATIONAL—Harrisburg Twp. School Dist., R. L. Foster, principal, Harrisburg, 160x180 ft., brick, concrete, steel gymnasium and vocational bldg., from Edgar Stephens & Son, Cairo, $340,000. CD 2/25.

N. Y., Hudson—HEATING TUNNELS, etc.—Dpt. Public Wks., Albany, heating tunnels and conduits, New York State Training School for Girls, from Holland Constr. Corp., 260 E. 161 St., New York, Zone 51, $288,630. CD 2/20/45.

Okla., Tulsa—CHAMBER OF COMMERCE—U. S. Junior Chamber of Commerce, Tulsa Bldg., Zone 1, Mar. 20, 3 story Junior Chamber of Commerce Bldg., air-conditioned, 21 and Main Sts., from Cross Constr. Co., Kennedy Bldg., Zone 2, $384,900. Est. $350,000. CD 3/7.

Tex., San Antonio—DORMITORY, etc.—San Angelo College, San Angelo, rejected bids Mar. 15, dormitory and dining hall, LB, $312,875. Revising plans. CD 3/22, under LB.

Wash., Seattle—SCHOOL—School Dist. 1, 815 4 Ave. N., Mar. 21, general contract, 46x670 ft., rein.-con. steel frame Van Asselt School, from Caudrey & Verno, 4115 Surbee Dr., $542,512. CD 3/3.

CONTRACTS AWARDED

O., Xenia—SCHOOLS—Bd. Educ., R. J. Asmer, supt., Xenia, general contract, 2 grade schools one in North End, north of Shawnee Village and east of N. Detroit St. and other in Spring Hill sect., east of S. Detroit St. and south of Rogers St., to Stansbury Constr. Co., Circleville, $460,000. Awarded 3/15. CD 11/23.

Tex., Liberty—HOSPITAL—Liberty County, Yettie Kersting Memorial Hospital, Liberty, 35-bed hospital, to M. B. Semands, P. O. Box 979, Conroe, $266,008. Bids 2/2. Gatourix & Gibson & E. G. Glasser, 403 Main Bldg., Houston, engrs.

Va., Arlington—SCHOOL—Bd. Educ., 2732 Wilson Blvd., construct Hume School, S. 24 St. between Ode and Nash Sts., to Allen C. Minnix & Sons, 216 C St., N. W., Wash. 25, D. C., $346,731. Awarded 3/20. Dickey & Graham, Jr., Arlington, archts. CD 10/14/48.

COMMERCIAL BUILDINGS

SOON LETS CONTRACT

Miss., Jackson—CHURCH—Galloway Memorial Methodist Church, c/o N. W. Overstreet & Assoc., archts., 201 N. Lamar St., soon lets contract church alterations, addns. CD 2/26/47.

LOW BIDDERS

▲ **D. C., Wash.**—HOSPITAL—Children's Hospital, 13 and V Sts. N.W., Mar. 22, 5 story, rein.-con. hospital behind old structure and remodeling present bldg., W St. at 13 St. N.W., from Charles H. Tompkins, 907 16 St. N.W. **$1,919,000.** CD 3/21.

CONTRACTS AWARDED

Fla., St. Petersburg—APARTMENT DEVELOPMENT—Tropic Terrace Apartments c/o contractor, apartment development, to Radford Constr. Co., 1761 3 Ave. No., Approx. $350,000. CD 2/27.

Miss., West Point—HOUSING—W. L. Holcob & Assoc., Clarksdale, 90 homes. Owner builds. $500,000.

Mo., St. Johns Station (St. Louis, Zone 14)—RESIDENCES—Richard C. Roberts, Overland, St. Louis, Zone 14, twenty 1 story, 27x36 ft., brick residences, concrete fdns., Belhaven Dr. east of Haverbrook. Owner builds.

Neb., Omaha—DWELLINGS—A. S. Battiato Constr. Co., 4929 Grand St., 4 dwellings, N. Fontenelle Blvd. Owner builds. Approx. $450,000. J. C. Jackson, 513 S. 20 St., archt.

O., Dayton—HOUSES—Frank Ver, c/o Byrne Realty Co., American Bldg., twenty 1½ story houses in Golf Club Estates, opposite Community Country Club on Dorothy Lane. Owner builds. Approx. $270,000.

Tenn., Nashville—OFFICE—National Life & Accident Insurance Co., c/o contractor, office, to Foster & Creighton Co., American National Bank Bldg. Approx. $400,000. CD 7/11.

INDUSTRIAL BUILDINGS

SOON LETS CONTRACT

Calif., Sacramento—PLANT—Sacramento Bee, McClatchy Newspaper Service, 7 and I Sts., soon lets contract steel, rein.-con. newspaper plant 1st unit to house press, foundry and mail rooms. Approx. $750,000. Lockwood Greene Engineers, Inc., 10 Rockefeller Plaza, New York, N. Y., engr. CD 1/16.

Ill., Rockford—FACTORY—National Lock Co., Rockford, soon lets contract 6 story, 70x122 ft., rein.-con. factory addn. Gilbert A. Johnson, American Natl. Bank Bldg., archt. and engr.

LOW BIDDERS

Calif., Santa Cruz—PLANT—Watt-Schilling & Co., Coast Rd., 2 story, 80x80 ft., concrete packing plant addn., from K. J. MacGranahan, 504 Spring St. Approx. $140,000. James M. Smith, 251 Kearny St., San Francisco, engr.

CONTRACTS AWARDED

Fla., Jacksonville—PLANT—Florida Mutual Products, Inc., 4115 Evergreen Ave., Zone 6, mfg. plant, to A. L. Clayton Co., 2446 Dennis St., Zone 4. $75,000. Awarded 3/21.

O., Bryan—FACTORY—Fifty Corp., c/o contractor, 100x160 ft. factory mfg. automotive parts, near junction of New York Central and Cincinnati Northern R.R., to Weaver Constr. Co., Bryan. Approx. $200,000.

O., Cleveland—SALES and SERVICE, etc.—Standard Tool Co., 6918 Central Ave., sales service and office bldg. at 3950 Chester Ave. to Leonard H. Krill Co., 2169 E. 33 St. Approx. $350,000. Dalton & Dalton & Assoc., 979 Old Arcade St., archts. CD 2/17.

▲ **Okla., Elk City**—PLANT—Shell Oil Co., Inc., Mayo Bldg., Tulsa, gasoline extraction plant, to Refinery Maintenance Co., 2801 San Jacinto St., Houston Tex. Approx. $3,250,000. CD 1/26.

Tex., Houston—WAREHOUSE—Mathieson Chemical Co., 2nd Natl. Bank Bldg., warehouse, to Metallic Building Co., 4601 Holmes Rd. Approx. $75,000. CD 3/8, under LB.

Va., Lynchburg—PLANT—Lane Co., c/o contractor, plant addn., to C. L. Lewis, Inc., Lynchburg. Approx. $115,000.

Va., Martinsville—WAREHOUSE—Ben W. Via & John D. Nance, c/o contractor, tobacco warehouse, to J. E. Burton Co., South Boston. Approx. $70,000.

Wash., Seattle—GARAGE—Standard Service Tire Co., 910 Virginia St., 2 story, rein.-con. garage addn. to Livers Bros., 1938 W. 96 St. Approx. $150,000. T. F. Bellamy, 10119 Radford St., archt.

Wash., Spokane—WAREHOUSE—Postell Produce Ct., W. 1231 Ide St., produce warehouse addns., to Halin & Spilker, N. 2932 Crestline St. Approx. $118,000.

Ont., London—FACTORY—Empire Brass Co., C. H. Ivey, genl. mgr., Dundas St. E., 2 story, brick, steel, rein.-con., factory addn., to McKay Cooker Constr. Co., 210 Dundas St. Approx. $100,000. Bids 3/14, awarded 3/23. CD 2/28.

UNCLASSIFIED

BIDS ASKED

Ark., Little Rock—PARK—B. A. 4/11—Bd. Pub. Affairs, City Hall, Gillam Park for Negroes. $65,000. Bruce Anderson, Wallace Bldg., archt. CD 3/30.

Ga., Athens—STADIUM—B.A. 4/11—University of Georgia Athletic Assn., c/o Cooper, Bond & Cooper, Henry Grady Bldg., Atlanta, 5 South stands at Sanford Stadium addn. Plans deposit $10.

Minn., Albert Lea—ATHLETIC FIELD—B.A. 4/11—Bd. Edu., W. B. Lyon, secy., athletic field improvs. $70,000. Plans deposit $10. H. V. Feehan, 1004 Marquette Ave., Minneapolis, archt. CD 1/17.

N. Y., St. George—FERRY TERMINAL—B.A. 4/11—omrs. Marine & Aviation, Pier A, North River, New York, Zone 4, construct viaduct and main terminal bldg., Sect. 2; reconstruct terminal and approaches at St. George Ferry Terminal, Contr. 2612R. Plans deposit $35. CD 5/21/45.

Nebraska—RURAL DISTRIBUTION LINES—B.A. 4/12—Panhandle Rural Electric Memberships Assoc., Alliance, furnish part of materials, construct 429.8 mi. rural distr. lines, Sheridan, Box Butte, Sioux and Gordon Counties. $350,000. Raymond H. Reed & Co., Columbus, engrs. CD 4/8.

† **W. Va., Clarksburg**—LANDSCAPE IMPRVT.—B.A. 4/12—U. S. Eng., Huntington, Zone 16, landscape imprvt. of Veterans Administration Hospital, Serial No. CIVENG-46-022-50-81.

N. S., Gabarus—WHARF—B. A. 4/12—Acting Secy., Dist. P. Wks., Hunter Bldg., Ottawa, Ont., breakwater-wharf replacement. Approx. $135,000. Plans deposit $25. R. Blais, c/o owner, engr. CD 3/18.

† **Alabama**—DOLPHINS, etc.—B.A. 4/13—U. S. Eng., P. O. Box 1169, Mobile, 7 dolphins and mooring stakes at Reserve Fleet Storage on Tensaw River, Hurricane. Plans deposit $5.

† **S. D., Sturgis**—CEMETERY FACILITIES—B.A. 4/13—U. S. Eng., 1704 Jackson St., Omaha 2, Neb., lodge bldg. and addnl. facilities at Black Hills National Cemetery, Serial No. Eng 25-066-50-8. CD 3/2.

Ia., Cedar Rapids—STADIUM—B. A. 4/14—Bd. Educ., stadium at veteran's Memorial Field. $500,000. Wm. Stuhr, Rock Island, archt. CD 3/22.

† **N. M., Las Cruces**—MOTOR TESTING FACILITIES—B.A. 4/14—U. S. Eng., Box 1538, Albuquerque, completion motor testing block facilities, White Sands Proving Grounds, Serial No. Eng 29-005-50-39. $50,000.

Kansas—RURAL DISTRIBUTION LINES—B.A. 4/18—Norton-Decatur Co-operative Electric Co., Norton, 285.91 mi. rural distr. lines, Norton, Graham, Phillips and Rooks Counties. $300,000. Raymond H. Reed & Co., Columbus, Neb., engrs. CD 10/4.

N. S., Halifax—HEATING SYSTEM—B.A. 4/20—P. J. Mangan, engr., 1032 Gottingen St., Halifax, heating sys. for permanent married quarters, Tufts Cove, for Central Mortgage & Housing Corp., 70 Lyon St., Ottawa, Ont.

Mo., St. Louis—TAXIWAYS—B.A. 4/25—City, Frank J. McDevitt, pres., Bd. P. Service, 304 City Hall, Zone 3, reconstr. 4,500 ft. taxiways Lambert-St. Louis Municipal Airport, incl. laying 50 ft. strip concrete in middle of 100 ft. wide asph. taxiway on north and west side of field leading to main north and south runway. $260,000. And drainage sys. imprvs., $80,000. CD 6/12/44.

† **Oklahoma**—TRANSMISSION LINES—B.A. 4/26—Southwestern Power Admin., U. S. Dpt. Interior, P. O. Drawer 1619, Tulsa, Zone 1, 70 mi. 132 kv. H-frame transmission line 2 mi. northeast of Tupelo to near State Hy. 75. $560,000. CD 4/13.

CONTRACTS AWARDED

▲ **California**—PIPE LINES—Southern California Gas Co. and The Southern Counties Gas Co., 810 S. Flower St., Los Angeles, installing 82 mi. 30 in. steel pipe lines from Elsinore Calif., easterly to the junction with existing Texas Lines near White Water, Calif., to Midwestern Constructors, Dallas, Tex., L. E. Dixon, 404 S. California St., San Gabriel, and Johnson-Western Gurite Co., 2100 Wilmington and San Pedro Rd., San Pedro. Approx. $1,400,000; pipe to be supplied by Consolidated Western Steel Corp., Box 2015, Terminal Annex, Los Angeles, Zone 54, Approx. $4,600,000. CD 8/31/48.

Kansas—RURAL DISTRIBUTION LINES—Lane Scott Co-operative, Dighton, Contr. Sec. B—176 mi. rural distr. lines, Lane Co., to Basanda Constr. Co., 2925 N.W. 39 Terrace St., Oklahoma City, Okla. $345,124. CD 10/11.

Okla., Elk City—FIELD PIPE LINE GATHERING SYSTEM—Shell Oil Co., Inc., Mayo Bldg., Tulsa, field pipe line gathering sys. and outside piping in connection with refinery area proj., to Refinery Maintenance Co., 2801 San Jacinto St., Houston, Tex., Approx. $90,000.

Tex., San Antonio—SHOPPING CENTER SITE PREPARATION—H. E. Butt Grocery Co., Robstown Rd., Corpus Christi, site preparation for shopping center, incl. drainage extens., flume wall, concrete curbs, sidewalks, earth excavat., embankment, earth fill, asph. paving, concrete fdns. for all requirements except bldg., Alamo Heights, to H. B. Zachry Co., P. O. Box 2570. $128,935. Est. $145,000. CD 12/1, under Commercial Bldgs.

Ont., London—GAS MAINS—City Gas Co., 215 Dundas St., construct 4½ mi. mains to new plant of General Motors Diesel Co., own forces, $100,000.

PROPOSED PROJECTS

WATER SUPPLY

Ky., Lexington—Lexington Water Co., 167 N. Upper St., Lexington St., water main extens. $500,000. E. E. Jacobsen, genl. mgr.-engr.

La., Jennings—City—c/o Anthony Schmitt, City Finance Comr., bond election May 16, water main extens. $100,000. CD 4/21.

Minn., Lauderdale—Village, G. Gunderson, clk., WW. sys. $100,000. E. G. Briggs, 2300 University Ave., St. Paul, engr.

N. D., Cavalier—City, voted $175,000 bonds Feb. 27, water sys. imprvs. $125,000. CD 6/30/47.

▲ **O., Columbus**—City, Hoover Dam on Big Walnut Creek, new water supply sys. $8,000,000, bond election in November. CD 10/2/47.

Okla., Ardmore—City, voted bonds, WW extens. $825,000. Sam Mathews, Ardmore, engr. CD 2/8.

Tenn., Fountain City—Knox County Water System, 626 S. Gay St., Knoxville, water filter plant. $250,000.

Tex., Galveston—City, bond election Apr. 29, WW sys. rehabilitation, expansion $800,000. Extended bond election date. George H. McDaniel, city engr. CD 3/17.

Tex., Highlands—Harris County Water Control & Imprvt. Dist. 1, Highlands, bond election Apr. 15, WW sys. imprvs., extens. $135,000.

Tex., Huntsville—City, voted bonds, water supply main, supply well, $150,000; water distr. lines and main into newly-annexed areas, $225,000. CD 2/16.

Wash., Spanaway—Spanaway Water Dist., Spanaway, defeated bonds water sys. $340,000. CD 2/28.

Ont., Agincourt—Municipality, pump at water intake plant, 12 in. main in Kennedy Rd., 250,000 gal. tank, $220,000.

SEWERS, WASTE DISPOSAL

Ark., Fordyce—Ed. Murry, mayor, Fordyce, sanitary sewerage sys. extens., imprvs., new treatment plant, Ark. 3-P-1007. $274,000. E. G. Hampton, Fordyce, consult. engr. CD 10/25/45.

Ark., Rogers—R. L. Voyt, mayor, Rogers, sewer collection sys. extens., repairs, sewage treatment plant, Ark. 3-P-1008. $303,633. Marion L. Crist & Assocs., Union Life Bldg., Little Rock, consult. engrs. CD 11/20/48.

Calif., San Diego—Bd. Supervs. San Diego Co., 208 Civic Center 30,989 ft. 8 in. sanitary sewer and pump plant in Area 4, Lemon Grove Sanitation Dist. $210,340. Warren Barney, Co. engr.

Del., Camden and Wyoming—Joint Councils of Camden and Wyoming, Mayor H. D. Cluley, Camden, in charge, sewage disposal plant for both towns. $280,000.

La., Jennings—City, c/o Anthony Schmitt, City Finance Comr., bond election May 16, sanitary sewer lines, pump station imprvs. $700,000. CD 4/21.

La., Marksville—Town, c/o Town Clerk, bond election April 25, sewer lines, disposal works, $150,000. CD 7/17/47.

Mass., Southbridge—Town Bd. Selectmen, Town Hall, sewage disposal incl. treatment plant imprvs., commutors pump station, grit chamber, trickling sys., settling tanks, contact chamber, East Main St. Relief Sewers. $200,000. Hayden, Haeding & Buchanan, 826 Park Sq. Bldg., Boston, consult engr. CD 6/8/47.

Mo., Vinita Park (St. Louis P. O.)—Village, C. W. Ermes, chn. Bd. Trustees, 8205 Jackson Ave., Zone 14, storm and sanitary sewerage sys., outlets, etc. $250,000. CD 5/22/47.

N. Y., Cambridge—Village, sewerage sys., treatment plant. $200,000.

O., Toledo—Toledo Compost Corp., c/o J. W. Frazer, Frazer Products Corp., Alpena, Mich., garbage compost plant, Erie St. and Swan Creek. $100,000.

Okla., Ardmore—City, voted bonds, sanitary sewer extens. sewage disposal plant. $225,000. Sam Mathews, Ardmore, engr. CD 2/8.

Tex., Highlands—Harris County Water Control & Imprvt. Dist. 1, Highlands, bond election Apr. 15, sanitary sewerage sys. imprvs., extens. $165,000.

Tex., Huntsville—City, voted bonds, sanitary sewer line extens. into newly annexed areas. $225,000. CD 2/16.

Wash., Deer Park—Town, Town Hall, sewerage system and disposal plant. $160,000. W. L. Maloney, Symons Bldg., Spokane, consult engr. CD 12/21.

Wis., Neenah—Bergstrom Paper Co., 225 W. Wisconsin Ave., waste treatment plant. $150,000.

Wash., Seattle—Val Vue Sewer Dist., c/o H. T. Harstad & Assocs., engrs., Smith Tower, Seattle, Zone 4, sewerage sys. in Duwamish Dist. $100,000.

▲ **Wash., Walla Walla**—City, City Hall, sewage disposal plant addn. $1,000,000. CD 6/23/46.

Ont., Leamington—Council, Mayor Sherman, sanitary sewer extens. for Wilkinson Dr. and Hazleton St. and extend 30 in. outlet in northern section, $60,000; incinerator, $50,000 to $60,000. C. G. R. Armstrong, Bartlett Bldg., Windsor, engr.

Ont., Port Arthur—City, A. W. Evans, clk., installing sewer mains and storm sewers. Approx. $106,670. S. E. Flook, c/o owner, engr.

BRIDGES

▲ **Calif., Long Beach**—City Harbor Dpt., 1333 Embarkacero St., Anaheim St. Bridge crossing The Los Angeles Flood Control Channel. $1,500,000. Moffatt & Nicholas, Inc., 122 W. S St., consult. engrs. CD 12/6/44.

Wash., Tacoma—City, City Hall, defeated bonds grade separations at Orchard St. and at 12 St., $50,000 each, on connecting highway to Narrows bridge from 12 and Tyler to 6 Ave. and Pearl St. D. E. Morris, city engr. CD 1/30.

(Continued on page 78)

4 important advantages

- Better wetting or coating of aggregate
- Greater stickiness and binding quality
- Faster setting of roads
- Blacker appearance

Now, you can build longer-lasting secondary roads in less time and at lower cost! Roads laid with the improved Standard Road Oils will wear longer because the aggregate is bound tightly into the road surface. Faster setting will mean less traffic delay. You'll do the job in less time.

Ask a Standard Oil Asphalt Representative for all the facts about these improved road oils. Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

STANDARD OIL COMPANY (INDIANA)

STANDARD

KEEP YOUR CONVEYOR BELTS GOING

FLEXCO H D RIP PLATES are used in repairing rips and patching conveyor belts. Their use saves expensive replacements and extended shutdowns.

● Avoid shutdowns and lengthen the life of your conveyor belts and bucket elevator belts by using Flexco belt fasteners. Thousands of companies have stepped up the performance of conveyor lines and cut costs by using Flexco methods.

FLEXCO H D BELT FASTENERS make a strong, tight butt joint with long life. Recessed plates embed in belt, compress belt ends and prevent ply separation. Six sizes in steel and alloys.

Bulletin F-100 shows exactly how to make tight butt joints in conveyor belts with Flexco. Also illustrates step by step the latest practice in repairing rips and putting in patches.

FLEXIBLE STEEL LACING CO.
4656 W. Lexington St., Chicago

Write for your copy.

FLEXCO H D BELT FASTENERS

Sold by supply houses everywhere

PITTSBURGH · DES MOINES

ELEVATED STEEL TANKS

We design, fabricate and erect Elevated Steel Tanks for every industrial purpose—in all types and capacities. *Write for our descriptive Elevated Tank Bulletin.*

PITTSBURGH · DES MOINES STEEL COMPANY

Pittsburgh, Pa. 3414 Neville Island
Des Moines, Ia. 915 Tuttle Street
Santa Clara, Cal. 621 Alviso Road

(Continued from page 76)

STREETS AND ROADS

Calif., Los Angeles—City, Bd. P. Wks., City Hall, impr. Pierce St., and O'Melveny Ave., $115,827. Lloyd Aldrich, city engr.

▲ Ill., Chicago—City, City Hall, Zone 2, paving Homan Ave. from Dysen St. to Roosevelt Rd., $300,000; paving Damen Ave. from Hubbard St. to North Ave., $500,000; paving Western Ave. from 111 to 119 Sts., $200,000.

Neb.—State Dpt. Roads & Irrigation, Lincoln, blacktopping U. S. Hy. 81 from north line of State to Bloomfield, $950,000. F. H. Klietsch, Lincoln state engr. CD 7/22/43.

▲ Tenn., Nashville—City, c/o Mayor, City Hall, Boulevard in rear of State Capitol, connecting Public Square and 8 Ave., North, $1,000,000. CD 11/21/45.

Tex., Galveston—City, impvt. bond election Apr. 29, street paving, $600,000. Extended bond election date. George H. McDaniel, city engr., CD 3/17.

Man., Winnipeg—Municipality, widen Balmoral St. between Elice and Notre Dame Aves., $235,000. W. D. Hurst, City Hall, city engar.

Ont., Port Arthur—City, A. H. Evans, clk., pavements on various streets, Approx. $263,950. S. E. Flook, c/o owner, engr.

Ont., Toronto—W. H. Heaton, clk., East York Twp., Toronto, 3 in. pentration japh on Westview Blvd., Joanite Dr. Gardena, Crescent, Sheaman Ave., Hodder St., Selwyn Ave., and Rowan road Approx., $101,831. J. D. Corcoran, Corwell and Mortimer Aves., engr.

EARTHWORK, WATERWAYS

Calif., Redwood City—City, City Hall, $880,000 bond election Apr. 11, impvt. Redwood Creek. Paul G. Adamson, 105 Hamilton St., Palo Alto, consult. engr. G. M. Jain, City Hall, city engr. CD 12/13/44.

Tex., Freeport—Brazoria County Navigation Dist., c/o E. L. Boston, Freeport, harbor, $500,000.

▲ Tex., Galveston—City, bond election Apr. 29, drainage sys. expansion, $1,500,000. Extended bond election date. CD 3/17.

P.E.I., Skinner's Pond—Government of Canada, Ottawa, Ont., boat harbor, $110,000 voted. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., engrs.

AIRPORTS

Tex., Houston—HANGARS—J. W. Magone, 4529 Keystone St., three 80x120 ft., and one 110x220 ft. hangars, at Municipal Airport (Flight School) $150,000.

† Tex., San Antonio—SEWAGE DISPOSAL PLANT, etc.—U. S. Eng., 606 Santa Fe Bldg., Galveston, sewage disposal plant addn. at Lackland Air Force Base, $110,000; sewage disposal plant addn. at Kelly Field, $115,170.

▲ Wash., Spokane—PAVEMENT, etc.—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, pavement, fuel storage and barracks at Air Force Base, $6,645,000.

† Wash., Tacoma—STORAGE, etc.—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, jet fuel storage and dispensing equip., runway exten. at Mc Chord Air Force Base, $573,337.

▲ †Alaska, Fort Richardson—UTILITIES and WARM STORAGE—U. S. Eng., (APO 442 c/o PM, Seattle, Wash.), Anchorage utilities and warm storage at Elmendorf Air Force Base, $1,191,746.

AMERICANS ABROAD

Italy—Intercontinental Hotels Corp., 41 E. 42 St., New York 17, N.Y., U.S.A., surveys by Holabird, Root & Burgee, 180 N. Wabash Ave., Chicago, Ill., U.S.A., hotel structure.

India—Intercontinental Hotels Corp., 41 E. 42 St., New York 17, N. Y., U.S.A., surveys by Holabird, Root & Burgee, 180 N. Wabash Ave., Chicago, Ill., U.S.A., hotel structure.

Japan, Tokyo—Intercontinental Hotels Corp., 41 E. 42 St., New York 17, N. Y., U.S.A., surveys by Holabird, Root & Burgee, 180 N. Wabash Ave., Chicago, Ill., U.S.A., hotel structure, steel frame hotel.

Portugal, Lisbon—Intercontinental Hotels Corp., 41 E. 42 St., New York 17, N. Y., U. S. A., plans by Holabird, Root & Burgee, 180 N. Wabash Ave., Chicago, Ill., U. S. A., 150 room hotel, $1,200,000.

Saudi Arabia—Intercontinental Hotels Corp., 41 E. 42 St., New York 17, N. Y., U. S. A., plans by Holabird, Root & Burgee, 180 N. Wabash Ave., Chicago, Ill., U. S. A., 250 room hotel, $4,000,000.

South Africa, Johannesburg—Intercontinental Hotels Corp., 41 E. 42 St., New York 17, N. Y., U.S.A., surveys by Holabird, Root & Burgee, 180 N. Wabash Ave., Chicago, Ill., U.S.A., hotel structure.

Spain, Madrid—Intercontinental Hotels Corp., 41 E. 42 St., New York 17, N. Y., U. S. A., plans by Holabird, Root & Burgee, 180 N. Wabash Ave., Chicago, Ill., U. S. A., 200 room hotel, $3,000,000.

LATIN AMERICA

Mexico, Nuevo Laredo—Compania Manufacturera de Ropa Americana, Nuevo Laredo, plans reconstruction portion of clothing mfg. plant, $300,000.

Mexico, Queretaro—State Government, Palacio del Estado, Queretaro, Qro, plans state penitentiary, $500,000.

▲ Mexico, Reynosa—Petroleos Mexicanos, Mexico City, plans 3,000 bbl. daily capacity refinery, $1,744,000.

PUBLIC BUILDINGS

▲ Ala., Birmingham—HOUSING—Birmingham Housing Auth., c/o Warren, Knight & Davis, archts., Protective Life Bldg., 3 housing projects, including 1500 units, Proj. 2, $9,450,000. CD 1/9.

▲ Ala., Birmingham—HOUSING—Birmingham Housing Auth., c/o Charles H. McCauley, archt., Jackson Bldg., 3 housing projects, incl. 1500 units, Proj. 2, $9,450,000. CD 1/9.

Calif., Fortuna—SCHOOL—Fortuna Union High School Dist., Fortuna, $423,000 bond election May 19, high school addns.

Calif., Los Angeles—SCHOOL FACILITIES—City Bd. Educ., 1425 S. San Pedro St., plans by Albert B. Gardner, 408 S. Spring St., new facilities at Clarence W. Pierce School of Agriculture, $915,000. CD 10/25/45.

Calif., Palm Springs—HOSPITAL—Desert Hospital Dist., plans by Clark & Frey, 879 N. Palm Canyon Dr., Palm Springs, 40 bed hospital, $700,000.

▲ Calif., Vallejo—SCHOOLS—Vallejo Unified School Dist., Vallejo, $2,548,000 bond election Apr. 27, Junior High School and elementary school addns. CD 3/13/45.

Calif., Santa Cruz—HOSPITAL—Santa Cruz Co., Courthouse, 40-50 bed tuberculosis unit at county hospital, $400,000-$600,000.

▲ Conn., Bristol—HOUSING—City, Bristol Housing Auth., Fred. D. Zurrell, Cambridge Park, Bristol, plans by Russell F. Hills, 130 Washington St., Hartford, 120 family units, $1,200,000. CD 3/9.

Conn., Fairfield—SCHOOL—Town, Dr. C. G. Hoyt supt. Schools, plans by Lyons & Mather, 211 State St., Bridgeport, brick, steel, concrete McKinley School addn., $500,000.

▲ Conn., New Milford—SCHOOLS—Town, Office of Supervisor Bd. Educ., East Street, plans by Carl J. Malmfeldt Assocs., 36 Pearl St., Hartford, brick, steel school, Approx. $250,000; 2 story paint., brick, steel, concrete Junior-Senior High School, $1,250,000, Englehardt, Engelhardt & Leggett, W. 250 St. and Fieldstone Rd., New York, N. Y. consult. archts. CD 6/11/46.

Conn., Norwalk—SCHOOL—City, Irving Freese, mayor, City Hall, plans by Lyons & Mather, 211 State St., Bridgeport, 15 room brick, steel Junior High School, $500,000. CD 1/17.

▲ Del., Wilmington—HOUSING—Wilmington Housing Auth., 2403 Thatcher St., plans by George E. Pope & Albert Kruse, 210 Washington St., housing development, $1,000,000. CD 3/11/46.

▲ Fla., Tallahassee—FRATERNITY HOUSES, etc.—State Bd. Control, Tallahassee, plans by Marion T. Mendy, 435 University Dr., Miami Beach, fraternity houses $350,000; plans by Reynolds, Smith & Hills, 227 Park St., Jacksonville, Zone 1, fraternity houses, Approx. $700,000; plans by Guy C. Fulton, state archt., Peabody Hall, Gainesville girls dormitory and steel stadium, Approx. $500,000; plans by Russell Pancoast, 927 41 St., Miami Beach, student union, $500,000; plans by Bail-Horton & Assocs., Ft. Meyers, mens dormitory, $1,600,000, all foregoing at Florida State University. CD 2/27.

▲ Ga., La Grange—SCHOOL IMPRVS.—City Bd. Educ., La Grange, bond election Apr. 19, school impvts. $1,400,000. CD 2/25/46.

Idaho, Boise—DORMITORY—Boise Junior College, Junior College Campus, dormitory, $500,000.

Idaho, Pocatello—SCHOOL—Pocatello School Dist., bond election Apr. 18, Junior High School and farm shop for high school, $325,000. CD 10/28.

▲ Idaho, Twin Falls—HIGH SCHOOL—High School Dist., Twin Falls, plans by R. H. Paradice, H. G. Lash, assoc., Fidelity Bank Bldg., 1 story high school, $1,200,000. CD 6/20.

Ill., Marion—HOSPITAL—City, City Council, City Hall, voted bonds, 50 bed brick, concrete, stone municipal hospital, $900,000. CD 2/28.

Ill., Palatine—SCHOOL—Palatine Twp. High School, Palatine, plans by Charles Wheeler Nicol, 29 E. Jackson St., Chicago, Zone 4, high school, $800,000. CD 4/9/46.

▲ Ill., Springfield—SCHOOLS—Bd. Educ., Springfield, $1,610,000 bond election Apr. 11, 5 schools, $890,000; rehabilitating existing schools. CD 11/23.

Ia., Ankeny—SCHOOL—Bd. Educ., voted $400,000 bonds Mar. 13, school addn.

Ia., Bettendorf—SCHOOL—Bd. Educ., Bettendorf, voted $500,000 bonds Mar. 15, high school, W. F. Bernbrock & Assoc., 2630-5 Moline, Ill., archts. CD 2/16.

▲ Ia., Keokuk—COLLEGE—Bd. Educ., voted $1,250,000 bonds Mar. 13, Junior College.

▲ Ia., Ottumwa—SCHOOLS—Bd. Dir., Ind. School Dist., voted $1,205,971 Mar. 13, Junior High School, voted $545,310 bonds Mar. 1, Garfield School, Keffer & Jones, Masonic Temple, Des Moines, archts. CD 1/24.

▲ Ia., Sioux City—POWER STATION IMPRVS.—Iowa Public Service Co., 517-5 St., bldg. changes, boiler and turbine addns., Kirk Power Station, $1,200,000.

La., Houma—SCHOOL—Terrebone Parish School Bd., bond election Apr. 25, school impvts., $850,000.

▲ La., Lafayette—SCHOOLS—Lafayette Parish School Bd., bond election May 23, school improv., $2,558,000. CD 12/19.

Mass., Lynn—HOSPITAL—Lynn Hospital, 212 Boston St., Lynn, plans by Markus & Nocka, 251 Columbus Ave., Boston, hospital addns., alterations, $600,000.

▲ Mich., Lansing—LIBRARY—Michigan State College, Lansing, plans by Ralph Calder, 1212 Kales Bldg., Detroit, stone, masonry, structural steel library, $3,000,000.

N. C., Kinston—HOUSING—Kinston Housing Auth., Paul La Rocque, exec. dir., Kinston, 175 unit Negro Housing, bounded by Bright, Shine, East and McGewean Sts.

N. C., Lumberton—HOUSING—Lumberton Housing Auth., Lumberton, 125 housing units. Approx. $500,000.

N., Akron—HIGH SCHOOL—Bd. Educ., N. Broad St., plans by Milton Murphy, 70 N. Broadway, Kenmore High School addn. Approx. $500,000. CD 12/10/45.

▲ O., East Cleveland—GYMNASIUM, etc.—East Cleveland Bd. Educ., Shaw and Euclid Aves., Cleveland, bond election May 2, gymnasium for Shaw High School, Shaw Ave. $600,000; gymnasium and auditorium addn. to Caledonia School, $200,000; gymnasium addn. to Rozelle School, $200,000; addns. to 3 schools, $200,000. Walker, Kennedy & Delamotte, 6014 Euclid Ave., Cleveland, archts.

Pa., Lock Haven—DORMITORY—General State Auth., 18 and Herr Sts., Harrisburg, plans by George M. D. Lewis, Scranton Life Bldg., Scranton, women's dormitory at Lock Haven State Teachers College, $560,000. A. F. Jones, c/o owner, ch. engr. CD 2/28/50.

Tex., Big Spring—HIGH SCHOOL, etc.—Big Spring Independent School Dist., Big Spring, plans by Puckett & French, 607 Petroleum Bldg., high school, $700,000; gymnasium-auditorium, $50,000. CD 3/16.

▲ Tex., Electra — HOUSING—Electra Housing Auth., Electra, plans by John A. Perkins & Assoc., 2203½a Cedar Springs St., Dallas, 250 housing units, $1,087,500. CD 3/6.

Tex., Weslaco—HOUSING—Weslaco Housing Auth., Weslaco, plans by R. Newell Waters, Weslaco, 70-unit rental housing units. $600,000. CD 1/12.

▲ Wash., Seattle—HOUSING—Seattle Housing Auth., 825 Yesler Way, defeated bonds, 1,221 housing units, $10,000,000. CD 12/2.

▲ Wash., Tacoma—CITY HALL, etc.—City, City Hall, defeated bonds, city hall and civic center, $2,500,000. CD 12/1.

N. S., Halifax—COURT HOUSE—Halifax County Council, Halifax, court house exten, $400,000.

COMMERCIAL BUILDINGS

▲ Calif., Santa Clara—RESIDENCES—Gresham Constr. Co., Box 464, Saratoga, 136 residences, Homestead Rd. $1,250,000.

Idaho, Moscow—HOUSES—University Heights Inc., Moscow, 60 houses, $600,000.

Minn., St. Paul—TEMPLE—Mt. Zion Hebrew Congregation, 1900 Grand Ave., plans by Eric Mendelsohn & Michael A. Gallis Assoc., 627 Commercial St., San Francisco, Calif., temple and community center, $750,000.

N. J., Camden—HOSPITAL—West Jersey Hospital, Mt. Ephraim and Atlantic Aves., plans by George Von Uffel, Jr., 30 Warwick Rd., Haddonfield, hospital alterations, addns. $500,000. CD 4/4/49.

N. Y., New York—BANK, etc.—Massachusetts Bonding & Insurance Co., 130 William St., Zone 7, plans by Voorhees, Walker, Foley & Smith, 101 Park Ave., Zone 17, bank and office alterations at site, $950,000.

N. C., Cullowhee—LIBRARY, etc.—Western Carolina Teachers College, Cullowhee, plans by Six Associates, Inc., 15 Church St., and Anthony Lord, 17½a Church St., Asheville, assoc. archts., library, Approx. $250,000; science-classroom bldg., Approx. $250,000.

O., Campbell—HOUSING—Canvets Housing Assoc., Inc., P. O. Box 369, plans by Joseph Sraghoni, Campbell, 30 unit housing, on plot which parallels Struthers Rd. between Tenney and Ridge Aves. $500,000.

▲ Okla., Tulsa—SHOPPING CENTER, etc.—Eastor Lumber Co., 602 S. Frankfort St., Utica Square shopping center and apartment, 21 and Utica, $2,000,000.

▲ Pa., Pittsburgh — APARTMENT — 5th Neville, Inc., Liberty and Denny Sts., plans by Philip Friedman, 121 S. Negley Ave., 6 story, bunker brick, tile apartment, S. and Neville Sts. $1,500,000.

▲ Tex., Baytown — DWELLINGS — Britton-Cravens Lumber Co., Baytown, 146 masonry dwellings, concrete slab fdn., Sect. 4 of Britton-Cravens Addn. fronting Baytown-LaPorte Tunnel, $1,000,000.

▲ Tex., Brownsville—DWELLINGS—F. Garza, C. R. Berry & R. S. Shelburne, Alamo, 300 frame dwellings, concrete slab fdn., on 75 acre site, north of Los Ebanos Heights, $2,100,000.

Tex., Dallas—HOME for AGED—Dallas Home for Jewish Aged, Inc., 1617 Pocahontas St., plans by George B. Dahl, 508 Young St., Jewish home for Aged, on 15 acre tract north of Bachman Lake, $450,000.

▲ Tex., Dallas—DWELLINGS—Edward T. Dicker & Assoc., 101 Laurel Land Rd., project abandoned, 1,200 Negro residences, off Harry Hines Blvd. $10,000,000. CD 3/16.

Tex., Houston—DWELLINGS—De Witt O. Krahl, 2801 N. Mackenzie St., plans by Dubuisky & Jones, 494 Thornton Bldg., 28 Austin, store, brick cedar shakes dwellings, concrete slab fdn., in David Crockett addn. $420,000.

▲ Tex., Houston—APARTMENT—Lyon Garden Apartment Corp., c/o W. Ed Brown, S. Richey St., plans by Joseph B. Reynolds, 2518 Times Blvd., 252 unit, frame apartment, concrete slab fdn., Lyons Gardens, $1,260,000.

Tex., Houston—DWELLINGS—W. C. Perkins, 701 Gulf Bank Bldg., 76 dwellings, Pinney St. off Berry Rd. $550,000.

Tex., Houston—BUILDING—Sterling Building, Houston, remodeling 5½a story of existing 18 story bldg. incl. complete air-conditioning, $500,000.

Tex., McAllen—APARTMENTS—Frontier Arms Apartments, c/o Mike Robertson, McAllen, 48 unit two story, brick, hollow tile apartments concrete pier and beam fdn. $500,000.

Tex., Midland—AUDITORIUM—First Baptist Church, Midland, 1,800 seating capacity masonry auditorium, concrete pier and beam fdn. $750,000.

Tex., Odessa—HOUSING—Edgemore Apartments Corp., Odessa, plans by Charles E. Armstrong, Majestic Bldg., Fort Worth, and Otto Phillips, site planner, 9054½ W. Jefferson St., Dallas, frame, rental housing, reinf. con. slab fdn. $700,000.

Tex., San Antonio—SYNAGOGUE—Agudas Achim Congregation, 108 E. Quincy St., synagogue, on north side, $600,000.

Tex., San Antonio—DWELLINGS—Harlandale Building Corp., 6109-S. Flores St., 200 frame dwellings, concrete slab fdn., south of Military Dr. and east of S. Flores St., $600,000; 62 frame dwellings, concrete post fdn., in 5th unit of Rayburn Dr., $325,000.

Tex., San Antonio—DWELLINGS—J. K. Stark, 302 College Blvd., 54 brick dwellings, concrete slab fdn., on portions of Ivy Lane, Arvin Dr., Seaford Dr., $540,000.

▲ Wash., Seattle—HOSPITAL—Ballard General Hospital, 2208 W. Market St., plans by O. Hancock, New World Life Bldg., hospital, $1,050,000.

▲ Wash., Spokane—HOSPITAL—Deaconess Hospital, W. 733-1 St., 2 hospital addns., remodeling present bldg., $1,000,000.

▲ Alta., Edmonton—MARKET—I. E. Detwiler, First New Amsterdam Corp., 120 Broadway, New York, N. Y., plans by A. Gordon Lorimer, 254 & 54 St., New York, N. Y., U. S. A., market, $2,000,000; 2,500 seat auditorium and municipal centre, $2,000,000.

▲ Ont., New Toronto—HOSPITAL—Lake Shore Chamber of Commerce, H. Bairstow, pres., New Toronto, plans by J. B. Parkin & Assocs., 717 Church St., Toronto, 100 bed hospital, Lake Shore area, Approx. $1,000,000.

▲ Ont., Oshawa—HOUSING, etc.—Powell & Fressburger, c/o M. Starr, mayor, Oshawa, 600 dwellings, $3,500,000; movie picture studio, on Parkwood Farm site, $1,000,000.

▲ Ont., Ottawa—EXCHANGE—Bell Telephone Co., 1050 Beaver Hall Hill, Montreal, Que., telephone exchange addn., O'Connor St. $1,000,000. F. J. MacNab, c/o owner, engr.

▲ Ont., Toronto—OFFICE—Bell Telephone Co. of Canada, 76 Adelaide St. E., plans by F. A. Williams, regional archt., c/o owner, regional office bldg., University Ave. north of the armories, Approx. $4,000,000.

Que., Montreal—HOME—Montreal Protestant House of Industry & Refuge, 280 W. Dorchester St., home, $500,000.

INDUSTRIAL BUILDINGS

Ala., Powderly—TERMINAL—Pan American Southern Corp., Comer Bldg., Birmingham, pipe line terminal, rail loading racks, storage tanks, etc. $500,000.

▲ Ga., Atlanta—WAREHOUSE—Alterman Bros., 533 Whitehall St. S.W., grocery storage warehouse, $1,000,000.

▲ Ill., Chicago—FACTORY, etc.—E. J. Brach & Sons, Chicago Ave. and Pulaski Rd., multi-story factory and warehouse, $1,000,000.

▲ Ill., Chicago—MILL, etc.—National Biscuit Co., 1018 W. Washington St., plans by Alexander D. Crosett, 27 William St., New York, N. Y., grain and bakery, Central Park Ave. and 24 St. $3,000,000.

▲ Ill., La Grange Park—FACTORY—Peter Paul, Inc., 26-29 St., 1½ Ave. and Indiana Harbor Belt R. R., candy factory, $2,000,000.

Mich., Dearborn—OFFICE, OPERATING, ACTIVITY, etc.—Ford Motor Co., 3000 Schaefer Dr., plans by Skidmore, Owings & Merrill, S.E. 57 St., New York, N. Y., 11 story, central staff office bldg., 6 story operating activity bldg., 3 story tractor facility bldg., South Field Rd. and Michigan Ave. CD 6/7/46.

▲ N. Y., New York—PARKING GARAGE—Syndicate, c/o Merritt-Chapman & Scott Corp., engrs., 17 Battery Pl., Zone 4, parking garage on site between 6 Ave. and Broadway from 29 to 30 Sts. $5,000,000.

N. C., Asheville—PARKING GARAGE, etc.—C. J. Fisher, c/o William Waindo Dodge, Jr., Paragon Bldg., joint auto parking garage and motor court, $300,000.

▲ N. C., Pisgah Forest—PLANT—Olin Industries, Inc., East Alton, Ill., cellophane mfg. plant, $18,000,000-$20,000,000.

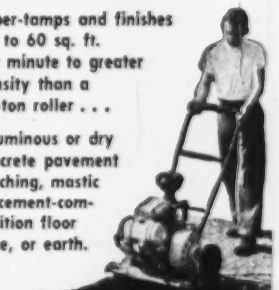
▲ N. C., Wilmington—OIL REFINERY—Mexican Petroleum Corp., Forrest G. Heath, mgr., Insurance Bldg., Riverside, refinery for producing asphalt, Approx. $3,000,000.

Tex., Garland—WAREHOUSE, etc.—Oil Well Supply Co., 2001 N. Lamar St., Dallas, warehouse and product modification center, 81.28 acre tract, $450,000.

a 10-TON ROLLER that weighs only 240 lbs.

Super-tamps and finishes 45 to 60 sq. ft. per minute to greater density than a 10-ton roller . . .

bituminous or dry concrete pavement patching, mastic or cement-composition floor base, or earth.



Heated plate hits 1900 blows per minute of over 1250 ft. lbs. each. Puts patches in solidly, sealed, cured, ready for immediate use. Works winter or summer.

Works where a roller can't — flush to tracks, curbs, manholes, walls, factory interiors, confined spaces.

Solves maintenance problem **on streets, highways and parking areas; paves new drives, walks, floors. One-man operation, transports on material truck, practically no traffic interference.**

Earth-tamping — fast and positively uniform tamping of large areas, ditches, flood walls, etc. Machine will not move until material has been solidly tamped.

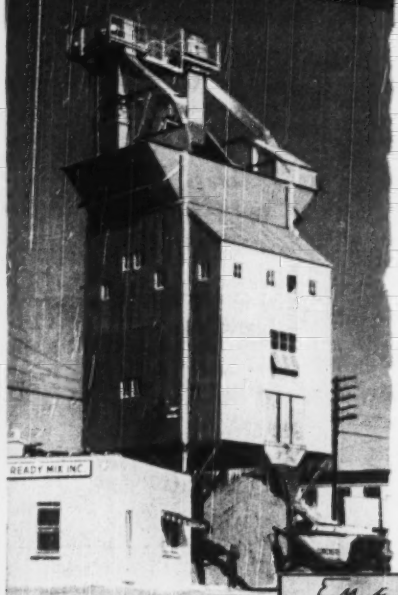
Send for catalog and name of distributor

WAYER IMPACTOR

INCORPORATED

12 North Third Street, Columbus 15, Ohio

IT'S COST PER YARD ...NOT CENTS PER POUND



It's operating economy alone that counts. That's as true in a Roadbuilder's Plant as it is in a Ready Mixed Concrete operation. The cents per pound for the steel with which the Plant is made are a very minor but highly profitable investment if they buy equipment which produces at top flight efficiency day after day, year after year. When you buy BUTLER equipment you buy the assurance of production at the lowest cost per yard—through BUTLER Engineered Design.

Engineered BUTLER Design

BUTLER BIN COMPANY

947 Blackstone Ave.
Waukesha, Wisconsin

Tex., Houston—PLANT—Dixie Cone Mfg. Co., c/o E. W. Patton, Silber Rd., plant expansion. $375,000.

Tex., Texarkana—SUB STATIONS, etc.—Southwestern Gas & Electric Co., J. D. McCarty, div. mgr., Texarkana, No. 1, power plant sub-station, $325,000; No. 2, power plant sub-station, $275,000; main power plant improv. expansion $150,000; power line extens. $250,000.

▲ W. Va., Fairview—COAL MINING—Jamison Coal & Coke Co., 116 N. Main St., Greensburg, Pa., coal mining establishment with complete facilities, tipple, 2 shafts powder house and shop Sugar Run Rd., near here, $3,000,000.

Alta., Edmonton — WAREHOUSE, etc. — Western Grocers Ltd., 289 King St., Winnipeg, Man., warehouse and office, Approx. $400,000.

▲ Newfoundland, Mobile—POWER PLANT—Newfoundland Light, Heat & Power Co., St. John, power plant; Approx. $1,500,000. Montreal Eng. Co. Ltd., 244 St. James St. W., Montreal, Que., engr.

Que., Shawinigan Falls — PLANT — Consolidated Paper Corp., Ltd., Sun Life Bldg., Montreal, 2 story, 62x115 ft., rein.-con. frame, brick Beloo pulp and paper plant addn., alterations. Approx. $300,000. H. G. Acres & Co., Ltd., 2135 Culp St., Niagara Falls, Ont., engr. CD 3/3.

UNCLASSIFIED

Calif., Los Angeles—CAMP FACILITIES—City B. Recreation & Parks, City Hall, plans by W. R. Smith & A. Q. Jones, 204 S. Los Robles St., Pasadena, girls camp facilities in Brush Canyon. Approx. $250,000.

Calif., San Bruno—SWIMMING POOL—City, City Hall, $200,000 bond election Apr. 11, municipal all-weather swimming pool.

Iowa—RURAL DISTRIBUTION LINES—Pella Co-Operative Electric Assn., Pella, rural distr. lines, Marion Co. $330,000. Brown Engr. Co., K. P. Bldg., Des Moines, engr. CD 8/21/47.

Ia., Davenport—STADIUM—City Bd. Directors, voted $205,000 bonds Mar. 13, North Brady St. Stadium improv., extens. CD 3/15.

▲ Ia., Moscow—DAM—First Iowa Hydro-Electric Co-operative, Muscatine, Moscow dam on Cedar River near here, $27,000,000.

Kansas—OIL LINES—National Co-operative Refining Assn., McPherson, 30 mi. crude oil pipe line from Lyons to McPherson, $200,000.

Ky., Lexington—GAS LINES—Central Kentucky Natural Gas Co., T. J. Tonkin, 166 Walnut St., approx. 8,500 ft. gas pipe extens., street lines. Approx. $200,000.

N. C., Wilmington—DRIVE-IN THEATER—W. E. Thursby, Wilmington, drive-in theater. $150,000.

Okla., Mazie—CAMP—Young Mens Christian Assn., 121 E. 4 St., Tulsa, plans by Robert Kerr, Tuloma Bldg., Tulsa. Y.M.C.A. boys camp at Mazie, on Grand Lake. $299,000.

Tenn., Chattanooga—TUNNELS—Miller Bros. Co., c/o Hunt, Caton & Assoc., archts., James Bldg., twin tunnels under Broad St. to connect buildings on 7 and Broad Sts., incl. excavation and roofing with concrete. $150,000.

Tex., Galveston—ELECTRIC TRAFFIC CONTROL SYSTEM, etc.—City, bond election Apr. 29, electric traffic control sys. incl. lines, $75,000; street lighting extens., $50,000. Extended bond election date, George H. McDaniel, city engr. CD 3/27.

Utah, Provo—ATHLETIC STADIUM—Church of Jesus Christ of Latter Day Saints, 47 E. South Temple St., Salt Lake City, plans by R. W. Jackson, 29 S. West Temple St., Salt Lake City, and Fred L. Markham, 45 N. University St., rein.con. athletic stadium at Brigham Young University, $900,000.

Va., Roanoke—STADIUM, etc.—Roanoke Red Sox, c/o Clarke Wray, pres., baseball stadium and field, $100,000.

Que., Rimouski—POWER DEVELOPMENT—Lower St. Laurence Power Co., Ltd., 1 St. John St., power development and storage reservoir and Metis River, $500,000.

Hayward Buckets

Use this Class "E" Clam Shell Bucket for handling crushed stone, gravel, sand and other bulk materials.
THE HAYWARD CO., 48-50 Church St., N. Y.

McKIERNAN-TERRY

Wide-Range Line of
PILE HAMMERS and **EXTRACTORS**

Now made in complete, standardized line of 10 double-acting hammers; 5 single-acting hammers and 2 double-acting extractors.

Write for free descriptive Bulletins.

Also builders of coal and ore bridges, bulk material unloaders, bridge operating mechanisms, hoists and marine equipment, and specially designed machinery.

McKIERNAN-TERRY CORP.
13 Park Row, New York 7, N. Y.

MOVING, RAISING, HEAVY SHORING, UNDERPINNING

National Operations

E. F. DAVID HOUSE MOVING CO.
Registered Engineers
1548 SO. VANDEVENTER AVE.
ST. LOUIS 10, MO.
Tel. Grand 3092
Established 1886

CONSTRUCTION REPORTS-Second Section

WATER SUPPLY

BIDS ASKED

Fla., Jacksonville—B.A. 4/20—City, City Hall, ground storage reservoir, aerator, pump station, well pumps and transmission mains at River Oaks Pumping Station, on River Oaks Rd.; ADV 2/2561. Plans deposit $50. Reynolds, Smith & Hills, 227 Pine St., Zone 1, engrs. JD 3/17/50.

Fla., Miami—B.A. 4/20—Water Sewer Bd., W. A. Glass, dir., 3342 Dinner Key Dr., water softening plant, Proj. SW-22, incl. four 1mg.d. ea. round concrete tanks, installing softening equip., steel lime bins, buckets, elevator, recarbonation basin and flumes, etc. Plans deposit $10. CD 2/21/49.

SEWERS, WASTE DISPOSAL

BIDS ASKED

N. Y., Roslyn—B.A. 4/11—Village Clerk, 153 Main St., sewage treatment plant addn., $175,000. Plans deposit $20. Clarence MacCullum, 249 Main St., Port Washington, engr.

Michigan—B.A. 4/12—State Hy. Dpt., State Bldg., Lansing, 0.232 mi. tunnel sewer in John C. Lodge Expressway from Hamilton and Stanley sts. to Fourth and Colorado, near Edsel Ford Expressway, Proj. UI-82 127, C 23. Plans deposit $5. M. H. Frimodig, state engr.

† Va., Little Creek—B.A. 4/12—Pub. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, repairing sewage plant at Naval Amphibious Base, Spec. 23826. Plans deposit $10.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

April 11	April 19
Iowa	New York
April 12	April 20
Michigan	California
New York	April 21
April 14	Pennsylvania
Kentucky	April 28
April 18	Alabama
Wisconsin	

New Jersey—B.A. 4/18—New Jersey Turnpike Auth., War Memorial Bldg., Trenton.

Middlesex Co.—superstructure for 5 span 800 ft. deck plate girder Raritan River Bridge. CD 7/13, under Streets and Roads.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

April 11	April 18
Iowa	Wisconsin
Maryland	April 19
April 12	California
Michigan	New York
Rhode Island	April 20
April 14	California
Kentucky	April 21
Minnesota	Pennsylvania
April 28	
Alabama	

Ia., Cherokee—B.A. 4/12—60, Supervs., Cherokee Co., Cherokee, grading local roads. Approx. $60,000. L. W. Casey, 110 W. 5th St., Cherokee, co. engr.

Minn., Blue Earth—B.A. 4/18—Faribault Co., G. G. Butcho, add. grav. surf. 4 mi. between 3 mi. north of Wells and North Co. line, S. P. 22-512-02 (SAR3), Minn. Proj. S 450 (1) and grav. surf. 3 mi. between 3 mi. near Frost, Proj. S. P. 22-513-01 (SAR8) Minn. Proj. S 34 (4). $50,000. Plans deposit 90c. A. G. Wericke, co. eng., engr.

Minn., Fergus Falls—B.A. 4/18—Otter Tail Co., W. Lincoln, aud., grav. surf. 5.5 mi. between 4.75 mi. east of Weigeland and Otter Tail Lake, Proj. S. P. 56-501-09, SAR3), Minn. Proj. S. 53 (5). Approx. $50,000. Plans deposit $2.35. W. F. Huber, co. hy. engr. and co. engr.

Minn., Little Falls—B.A. 4/13—Morrison Co., L. J. Billstein, aud., grav. surf. 2 mi. between Flensburg and T. H. 28, Proj. S. P. 49-502-02 (Sur. 3), Minn. Proj. S. 421 (2). Plans deposit $50, bit. surf. 7.9 mi. between Randel and 8 mi. north, Proj. S. P. 49-503-02 (SAR 5), bit. surf. 7.9 mi. between T. H. 1 mi. E. of Royalton and junction T. H. 218 at Little Rock, Proj. S. P. 49-510-04 (SAP 13), Minn. Proj. S. 240 (2) and bit. surf. 6.8 mi. between T. H. 218 at Pierz an. 6.7 mi. E., Proj. S. P. 49-518-02 (SAR 7), Minn. Proj. S. 361 (3). Plans deposit $1.10.

† N. M., Los Alamos—B.A. 4/27—U. S. Atomic Energy Comm., Los Alamos Diamond Drive relocation, 3.4 mi. arterial roadway, 3 to 5 lane widths; pedestrian underpass; utilities relocation; paving, Inv. No. 291-50-56. $100,000-$500,000. Plans deposit $50.

CONTRACTS AWARDED

▲ New Jersey—New Jersey Turnpike Auth., 65 Prospect St., Trenton, Cont. 7, grading, drainage structure 17.8 mi. in connection with constr. New Jersey Turnpike Sect. 2, between Woodbury Heights and Hartford, in portions of Camden and Burlington Counties, to A. J. Savin Constr. Co., 10 Village St., East Hartford, Conn., $3,391,484. Bids 3/14, awarded 3/24. CD 3/16, under LB.

▲ Ohio—State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 15, Type T-55, b. conc. resurf. S. R. 2, Ottawa Co., to Fenton Constr. Co., P. O. Box 310, Ashland, $97,000, est. $109,860***Type T-71 and struc., grading, paving, construct new steel open steel grid floor and reconstructing the floor system of an existing steel truss and steel beam bridge 3 spans, Bridge No. PI-23-86A, U.S.R. 23, Pike Co., to Hatcher Bros., 116 Schoolcraft, Mount Junction, $81,117, est. $92,730***construct Part 1 of Akron Expressway System, S.R. 5, consisting of main conduct substructures, grading bridge site and appurtenances, Bridge No. 50-5124, Summit Co., to The Morrell Co., 1414 Mahoning Bldg., Cleveland, $674,472, est. $818,230***Type 51 in 6-22, grading, draining, 4 drs., paving, C.R. No. 6, Sandusky Co., to General Dredging Co., Inc., 220 La Fontain St., Fort Wayne, Ind., $61,222, est. $76,300***Type T-55 on B-20 and structures, grading, draining, paving one span concrete slab Br. No. HA-292-07; one span concrete slab Bridge No. HA-292-16; 3 span concrete slab Bridge No. HA-292-32, Hardin Co., to Wren Reese, 535 W. Washington St., Napoleon, $73,422, est. $99,200*** Type T-55, T-71 and structures, U.S. R. 127, one span concrete slab Bridge No. MI-127-27e, 3 span steel concrete Bridge No. MI-127-113, 3 span concrete slab Bridge No. MI-127-126, Drake and Meridian Twps., Mertz-Diever Co., 1212 Clark St., Fort Wayne, Ind., $1,173,625, est. $1,250,800***Type T-55 and structures, grading, draining, c. conc. b. conc. paving, widen, construct continuous steel deck bridge No. CR-4-94, concrete pipe, S.R. 4, Crawford Co., to Frysinger Constr. Co., 16 E. Broad St., Columbus, $210,508, est. $212,000. Grand total, $2,371,366. Bids 3/14. CD 3/1.

▲ Pennsylvania—State Hy. Dpt., Harrisburg, construct divided hy. consisting of two 24 ft. wide lanes of c. conc. pavement on each side of 20 ft. wide earth divisor area and incl. 2 reinforcing structures, grading, drainage 50 ft. wide, construct divided hy. consisting of two 24 ft. wide lanes of c. conc. pavement on each side of 20 ft. wide earth divisor area and incl. 2 reinforcing structures, 31,193 ft. L. R. 333 16-C, 6-B, T. R. U. S. 111, from near Harrisburg Airport at intersection of L. R. 250 to point near Swabbytown, York Co., to Central Pennsylvania Quarry Services & Constr. Co., 270 E. Pine St., Hazelton, $2,289,934. Bids 3/10, awarded 3/21. CD 3/14, under LB.

EARTHWORK, WATERWAYS

BIDS ASKED

† Delaware—B.A. 4/11—U. S. Eng., 121 N. Broad St., Phila. 1, Pa., dredging approx. 349,000 cu. yd., place measurement of material from project channel in Harbor of refuge Delaware Bay 1 to 2 mi. south west of Atlantic Ocean entrance to Bay at Cape Henlopen, CIVENG 36-109-50 57. Extended date, CD 3/8.

† Minnesota—B.A. 4/11—U. S. Eng., 1217 Post Office Bldg., St. Paul, Zone 1, Stage 4, Red Lake River Channel improv., CD 12/29.

Minn., Granite Falls—B.A. 4/21—Yellow Medicine Co., G. L. Swanson, aud., constr. Co. Ditch 31, C. incl. 973 cu. yd. excav. Over $28,000, E. W. Youndale, Granite Falls, engr.

† New York—B.A. 4/11—U. S. 80 Lafayette St., New York, Zone 13, furnish, place approx. 1,260 tons core stone and 1,910 tons cover stone on protection mound at ends of breakwater in Plattsburg Harbor, Clinton Co., Serial No. CIVENG 30-075-50-90.

† Virginia and North Carolina—B.A. 4/11—U. S. Eng., foot of Front St., Norfolk, Va., main control switchboards and appurtenant equipment, Hoops Island Reservoir Proj., Serial No. CIVENG-44-210-50-60. Extended date, CD 3/3.

† Arkansas, Illinois and Tennessee—B.A. 4/12—U. S. Eng., P. O. Box 97, Memphis 1, Tenn., minor repairs to concrete asphalt riprap and other types revetment paving on banks of Mississippi River, between Mouth of Cache River, Ill. (Mile 969 AHP) and Helena, Ark. (Mile 600 AHP) Pocket 1 extends from mouth of Cache River, Ill. (Mile 969 AHP) to Barfield, Ark. (Mile 841 AHP) Pocket II extends from Memphis, Tenn. (Mile 832 AHP) to Helena, Ark. (Mile 600 AHP), Inv. Serial No. CIVENG-40-041-50-116.

Minn., Gaylord—B.A. 4/12—Sibley Co., N. C. Elderbrog, Aud., Gaylord, and Nicollet Co., H. Thiem, aud., St. Peter, constr. Judicial Ditch 1 in Sibley and Nicollet Counties as Proj. 1 and 2, Proj. 1 incl. 378,473 cu. yd. excav., 240 ln. ft. 48 in. to 72 in. culvert, 1,700 ln. ft. 14 in. drain tile, etc. $62,942. E. L. Chamberlain, Owatonna, engr.

† Tennessee—B.A. 4/12—U. S. Eng., P. O. Box 97, Memphis, performing minor repairs to various types revetment paving, Mississippi River, Inv. Serial No. CIVENG 40-041-50-116.

† Wyoming—B.A. 4/12—Bureau Reclamation, Dpt. Interior, Casper, Seminoe Dam fairrace repairs, Kendrick Proj., about 37 mi. northeast of Sinclair, Spec. 2948. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

† Delaware—B.A. 4/13—U. S. Eng., 102 N. Broad St., Phila. 1, Pa., embankments and drainage structures to dredge spoil disposal area at Pigeon Point, Inv. No. CIVENG-36-109-50-53. Extended date, CD 3/2.

† Washington—B.A. 4/13—Bureau Reclamation, Dpt. Interior, 204 N. 2nd St., Yakima, drilling water supply wells at Ross Pumping Plants 3, 4, 9, 9a, 13, 14, 15 and 17 and Mile 72.9 Sec. 61-74 Region 1, Extended date, L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr., CD 3/1.

† Wisconsin—B.A. 4/13—U. S. Eng., 428 Federal Bldg., Milwaukee, Zone 1, constructing installation safety handrails along 16 Lower Flox River Locks located between Menasha and De Pere, Serial No. CIVENG-47 013-50-34.

† Colorado—B.A. 4/14—U. S. Eng., P. O. Box 1538, Albuquerque, N. M., emergency bank protection Arkansas Street Bridge, Trinidad, Serial No. CIVENG-29-005-50-2, emergency bank protection Lamar and Arkansas River, Florence, Serial No. CIVENG-29-005-50-16, emergency bank protection Purgatoire River, Higbee, Serial No. CIVENG 29-005-50-19. CD 4/21/44.

† Iowa—B.A. 4/14—U. S. Eng., Clock Tower Bldg., Rock Island, Ill., constr. outlet works, dam, appurtenances, Coralville Reservoir, Iowa River, Johnson Co., Ia., approx. 4 mi. north of Iowa City, Inv. CIVENG 11-117-50-27.

† Iowa—B.A. 4/14—U. S. Eng., 1709 Jackson St., Omaha, Neb., installation power facilities for operation of flood gates on drainage Ditch 6, Inv. 159.

† Oregon—B.A. 4/14—U. S. Eng., 628 Pittock Block, Portland, Zone 5, construct snagfly and sect. permanent Southern Pacific Co. R. R., incl. necessary forest service road relocation on north bank of Middle Fork Willamette River, incl. grading approx. 10,000 ft. railroad, incl. logging clearing, grubbing, drainage structures, and right-of-way fence constr., approx. 11 mi. upstream from Lowell, Lane Co., extend upstream approx. 1½ mi., Serial No. CIVENG-35-026-50-295.

† Oregon—B.A. 4/14—U. S. Eng., Pittock Block, Portland, rock fixed pile and timber crib, 2 pile and timber wing walls, placing stone revetment, all at upstream end of Lazarus Island in Nehalem River, CIVENG-35-026-50-298.

† Kansas—B.A. 4/17—U. S. Eng., 602 Davidson Bldg., Kansas City 6, Mo., constr. Levee Unit 442-R, along right bank of Missouri River from Mile 476.4 to Mile 485.9 (1.9432 mileage), in Doniphan Co., CIVENG-23-028-50-122, CD 3/21.

† California—B.A. 4/18—Bureau Reclamation, Dpt. Interior, Tracy, earthwork, concrete lining, structures, Station 1 plus 74.50 to Station 432 plus 70, Newman wasteway and earthwork and Station 1 plus 50 to Station 148 plus 25, service lateral, Delta-Mendota Canal, Central Valley Proj., near Newman, Spec. 2951. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

† California—B.A. 4/18—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Walnut Grove, Calif., radial gates for Delta Cross Channel, Delta Div., Central Valley Proj., Spec. 2960. L. N. McClellan, ch. engr.

† Florida—B.A. 4/18—U. S. Eng., P. O. Box 4970, Jacksonville, dredging Entrance Channel, Turning Basin and Barge and Cantonment Harbor, Hillsborough Inv. No. CIVENG-08-123-50-77. Extended date, CD 3/3.

† Kentucky—B.A. 4/18—U. S. Eng., Madison Ave. and 8 St. W., Huntington 18, W. Va., backwater protection proj., Rumsey Greenup Co., along left descending banks of Ohio River, CIVENG-46-022-50-92, CD 3/16.

† Kentucky—B.A. 4/18—U. S. Eng., P. O. Box 97, Memphis, Tenn., placing approx. 14,000 tons 20 in. average thickness rock riprap, upper bank paving on prepared graded bank of Mississippi River at Wickliffe, Ky., Serial No. CIVENG-40-041-50-119.

† Ky., Louisville—B.A. 4/18—U. S. Eng., 830 W. Broadway, Zone 3, constr. Louisville Flood Protection Work, sect. 6, on left bank of Ohio River, at point approx. ¼ mi. west of Kentucky Secondary Grounds, extends downstream generally parallel with Ohio River to point approx. 1.3 mi. south of Lees Lane, thence southeast in general vicinity of Cane Run and Big Run, ends at Dixie Hy. approx. ¼ mi. south of Lower Hunters Trace Rd., Pleasure Ridge, CIVENG-21-029-50-78, CD 3/17.

† Wyoming—B.A. 4/18—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Bonneville and Emery, misc. structural steel cross-overs and rails for Boysen Power Plant, Boysen Unit, Boysen-Missouri River Basin Proj., Spec. 2965. L. N. McClellan, ch. engr.

† Washington—B.A. 4/19—U. S. Eng., Pittock Block, Portland, Ore., repairing pile Dike 108.8 in Columbia River 3 mi. upstream from Chinook, CIVENG 35-026-50-302. CD 8/23/45.

LOW BIDDERS

▲† Arkansas—U. S. Eng., 300 Broadway, Little Rock, Mar. 24, power house at Bull Shoals Dam, Cotter, Boyd, Clyde & Bruce Constr. Co., Grapevine, Tex., $3,724,382, Est. $4,771,395. CD 2/28.

CONTRACTS AWARDED

▲† California—U. S. Eng., 751 S. Figueroa St., Los Angeles, dredging earthwork, jetty construction, excavate, San Diego River and Mission Bay Improv. Floodway, San Diego, San Diego Co., CIVENG-04-343-50-24, to Guy F. Atkinson Co., Box 259, Long Beach, $2,340,600. Bids 2/17, awarded 3/15. CD 2/24, under LB.

▲† Mississippi—U. S. Eng., P. O. Box 60, Vicksburg, constr. Enid Dam Outlet structures and embankment closure section, site is on Yalobusha River in Yalobusha Co., approx. 3 mi. north of Enid, and 9.6 mi. east of Hy. 51, Yazoo Basin, CIVENG-22-052-50-103, to Cook Constr. Co., P. O. Box 1151, Jackson, $2,470,893, Bids 2/21. CD 1/20.

AIRPORTS

BIDS ASKED

† Va., Langley Field—GROUND CONTROL APPROACH FACILITIES—B.A. 4/11—U. S. Eng., First and Douglas Sts. N. W., Wash. 25, D. C., ground control approach facilities at Langley Air Force Base, Serial No. Eng 49-080-50-11-(14).

La., Shreveport—GROUND CONTROL APPROACH SYSTEM—B.A. 4/13—U. S. Eng., Box 61, Tulsa, Okla., ground control approach sys., incl. trenching, backfilling, underground electrical power supply sys., earthwork, etc., Barksdale A.F.B. CIVENG 34-066-50-10. $75,000.

† Calif., San Francisco—RADAR SYSTEM—B.A. 4/14—Opt. Commerce, Civil Aeronautics Admin., 5651 W. Manchester Ave., Los Angeles, radar system for San Francisco International Airport, Proposal 6-50-247. CD 11/16.

Wis., La Crosse—AIRPORT PAVING, etc.—B.A. 4/14—City, airport paving and turfing. Plans deposit $25. I. C. Herried, 4132 Iroquois Dr., Madison, engr. CD 10/5.

† Puerto Rico—TECHNICAL FACILITIES—B.A. 4/18—U. S. Eng., Box 5043, Ancon, Canal Zone, technical facilities for Bureau of Standards at Ramey Air Force Base, Serial No. Eng. 96-505-50-29.

LOW BIDDERS

▲ Minn., Minneapolis—AIRPORT IMPRVS.—Minneapolis-St. Paul Metropolitan Airports Comn., 2429 University Ave., St. Paul, Mar. 23, constr. work Wold-Chamberlain Field, incl. Schedule V, 1,450 lin. ft. 12- to 24-in. storm sewer lines, 11 manholes, catchbasins, concrete and bituminous pavement, concrete curb, gutter, from S. J. Groves & Sons Co., 510 Wesley Temple Bldg., $1,017,751, alternate $994,682; Schedule VI, high intensity lights, parking lot lights, conduit tunnel, transformers, etc., from Reliable Electric Co., 316 Bryant Ave. N., $315,971. CD 3/8.

AMERICANS ABROAD

Australia—Secretary of Victoria State Rivers & Water Supply Comn., 100 Exhibition St., Melbourne, receiving bids June 30, construct earthen dam to be known as the Big Eildon, which will be built just below the site of present Eildon embankment on Goulburn River, approx. 90 mi. northeast by road from Melbourne. CD 1/20.

FOREIGN

B. W. I., St. Lucia, Castries—Govt. of St. Lucia, Castries, awarded contract reconstructing section of town, incl. building, water and sewer mains, etc. to Holland, Hannen & Cubitts, Ltd., London, England. Approx. $6,000,000. Colonial Development Corp., London, England, engrs.

LATIN AMERICA

Bolivia—Minister of Economy, LaPaz, and by Bolivian Embassy, Continental Bldg., Wash. D. C., U. S. A., receiving bids May 1, completing Cochabamba-Santa Cruz Hy., incl. reconditioning existing road, building equip., purchasing admin. equip., construct approx. 290 kilometers highway and related works, completing approx. 104 kilometers of paving, and all incompleted culverts and bridges. Knappen Tippetts Abbett Eng. Co., 62 W. 47th St., New York 19, N. Y., U. S. A., engr.; adv. ENR 4/6. CD 3/2.

PUBLIC BUILDINGS

BIDS ASKED

▲ Ind., Richmond—HOSPITAL—B.A. in April—Bd. Trustees, Reid Memorial Hospital, 5 story hospital addn., $1,500,000. CD 8/28/47.

Md., Towson—SCHOOL—B.A. 4/11—Baltimore Co., Bd. Educ., Susquehanna and Washington Aves., 2 story, brick, stone, concrete steel, dormitory, Ron Junior High School addn., Stevenson Run Rd. and Eastern Ave. $350,000. Plans deposit $40, Palmer, Fisher, Williams & Nes, 1020 St. Paul St., Baltimore, archts., Kaigan & Kocken, 2017 Maryland Ave., Baltimore, structural engrs., Egli & Gompf, Inc., 2014 N. Calvert St., Baltimore, mechanical engr. CD 1/10.

▲ N. Y., Henrietta—SCHOOL—B.A. 4/11—Bd. Educ., Rush-Henrietta Central School Dist., Henrietta, central school, $1,500,000. Extended date. CD 3/22.

N. C., Greensboro—SCHOOLS—B.A. 4/11—City Administrative Unit, B. L. Smith, supt., Greensboro, Westover Terrace and Washington Street Elementary Schools, Plans deposit $25, general, $10, each; mechanical, McMinn & Nordfeet, Greensboro, archts. CD 12/8.

O., Dayton—SCHOOL—B.A. 4/11—Van Buren Twp. Local School Dist., Bd. Educ., C. A. Moyer, pres., 3700 Far Hills Ave., Greenmont School addn., Plans deposit $25, Ralf T. Parrish, 440 U. B. Bldg., engr. and archt. CD 11/25.

O., Perry—SCHOOL—B.A. 4/11—Bd. Educ., Perry, 1 story, bsmt., 54x200 ft., brick, steel school and alterations, addns. to present bldg., Narrow and Center Sts. $250,000. Fulton, Krimsey & Delamotte, 6014 Euclid St., Cleveland, archts., Levi B. Mumma, 6014 Euclid St., Cleveland, engr.

† S. C., Parris Island—QUARTERS—B.A. 4/12—W. T. Eckberg, Officer-in-Charge-of-Construction, P. O. Box 365, Naval Base, Charleston, Quarters Bldgs. 129 and 130, alterations, enlargement at Marine recruit Depot, NOY 47102, Spec. 23527. Plans deposit $10.

Vt., Waterbury—DORMITORY—B.A. 4/11—State of Vermont, Bldg. Council, Montpelier, dormitory for male employees, Waterbury State Hospital, $250,000. Plans deposit $25, Webber & Ericsson, 56½ Merchants Row, Rutland, archts. CD 2/15.

▲ Conn., Bridgeport—HOUSING—B.A. 4/12—City of Bridgeport Housing Auth., A. G. Ciresi, chn., 252 Hallett St., 504 two story row houses, Burr Court, $5,000,000. Plans deposit $100, refundable. Bids 1/15 cancelled. Harry J. Lindsay, 211 State St., archt. CD 11/22.

N. C., Rockingham—HIGH SCHOOL—B.A. 4/12—Richmond Co. Bd. Educ., F. B. McLeod, supt., Rockingham, Rohannon High School, Plans deposit $25, Extended date. John James Croft, Jr., Asheboro, archt. CD 1/17.

† Pa., Indiantown Gap—SHOP—B.A. 4/12—National Guard Bureau, Indiantown Gap Military Reservation, Annville Rd. No. 2, ordnance maintenance shop. Plans deposit $25.

Pa., Hollidaysburg—BOILER PLANT—B.A. 4/12—General State Auth., 18 and Herr Sts., Harrisburg, general contract, heating, plumbing and electrical work for boiler plant at Hollidaysburg State Hospital, $440,000. Plans deposit $10 each; steam distr. and tunnel, $132,000. Plans deposit $7.50 each; electrical distr., $113,000. Plans deposit $7.50. Hunter, Caldwell & Campbell, P. O. Drawer 911, Altoona, archts. A. J. Jones, city owner, ch. engr. CD 10/28.

▲ Pa., Hollidaysburg—HOSPITAL—B.A. 4/12—General State Auth., 18 and Herr Sts., Harrisburg, general contract, heating, plumbing, electrical work, elevators for hospital, $2,249,016. Plans deposit $20 each contract; C. L. Lappley, River View Manor, Hollidaysburg, archt. A. F. Jones, c/o owner, ch. engr. CD 9/29.

Ont., Toronto—SCHOOL—B.A. 4/12—Page & Steele, archts., 72 St. Clair Ave. W., 2 story, structural steel, brick, reinforced concrete Blvd. School, Frontenac Ave. east of Bathurst St. for First Twp. School Area of North York, H. M. Brownlee, secy., Toronto. Approx. $253,000. Plans deposit $50. CD 12/15/43.

Que., Morin Heights—SCHOOL—B.A. 4/12—A. Hamilton, secy. School Comn., Morin Heights, 1 story, 57x215 ft., 50x57 ft. concrete steel, brick school, $250,000. Plans deposit $150. G. D. Thompson, 1241 Guy St., Montreal, archt. T. G. Anglin, Dominion Sq. Bldg., Montreal, engr.

N. C., Chapel Hill—POWER PLANT EQUIPMENT—B.A. 4/13—University of North Carolina, C. E. Teague, asst. controller, Gerard Hall, power plant equip., electrical wiring and pipe work in 2 sections. Plans deposit $30, Wm. C. Olsen, 5 Exchange Pl., Raleigh, engr.

Pa., Huntingdon—BOILER PLANT—B.A. 4/13—General State Auth., 18 and Herr Sts., Harrisburg, boiler plant improv. for Pennsylvania Institution for Defective Delinquents at Huntingdon, $200,000. Plans deposit $7.50 ea. H. F. Lewis, Fisher Bldg., Johnstown, engr.

Pa., Torrance—EXERCISE ROOMS—B.A. 4/13—General State Auth., 18 and Herr Sts., Harrisburg, addn. (exercise rooms) to male disturbed patients bldg. and to male disturbed patients bldg. at Torrance State Hospital, $480,000. Plans deposit $10. Sorber & Horne 1st Natl. Bank Bldg., Greensburg, archts. A. F. Jones, c/o owner, ch. engr. CD 2/7.

S. D., Yankton—HOSPITAL WING—B.A. 4/13—State Bd. Charities & Corrections, Pierre, east wing to main bldg. at Yankton State Hospital, $400,000. W. J. Dixon, Mitchell Natl. Bank Bldg., Mitchell, archt. CD 2/13.

Tenn., Wartburg—SCHOOL—B.A. 4/13—Morgan Co. Bd. Educ., Fred Sutt, supt., Wartburg, 25,000 sq. ft. elementary sect. of Sunbright School and remodeling existing bldg.

Wash., Kent—SCHOOL—B.A. 4/13—School Dist. 415, Administration Bldg., 2 story, 88x054 and 47x118 ft. rein.-con. frame Senior High School, $500,000. Mallis, DeHart & Hopkins, Lyon Bldg., Seattle, Zone 4, archts. CD 10/24/47.

Wyo., Douglas—HOSPITAL—B.A. 4/13—Converse County Memorial Hospital, Douglas, 1 story, full bsmt., 160x230 ft., 15,000 sq. ft., 30 bed hospital, $300,000. Sam C. Hutchings Jr. Real Bldg., 1902 Thomas Ave., Cheyenne, archt. and engr. CD 11/11.

Calif., Davis—DORMITORY—B.A. 4/14—Regents, University of California, Berkeley (1) general contract (2) heating and ventilating (2a) combined heating, ventilating and plumbing (3) plumbing (4) electrical work (5) refrigeration and air conditioning (6) elevators, 1 and 2 story 42,000 sq. ft. rein.-con. food technology bldg., Approx. $250,000. Plans deposit $30, Herbert F. Goodrich, 1812 Jay St., Sacramento, archt. Ernest D. Francis, 1022 Jay St., Sacramento, engr. CD 10/8/45.

▲ Calif., Redwood City—HIGH SCHOOL—B.A. 4/14—Sequoia High School Dist., Redwood City, concrete block, wood frame Atherton-Menlo Park High School, Incl. thirteen 1 story bldgs., $1,300,000. Plans deposit $150, Arthur D. Jamsen & Wm. H. Deseing, Ansel Ave. and Patricia Dr. Atherton, archts. CD 5/31.

La., Ferriday—SCHOOL—B.A. 4/14—Concordia Parish School Bd., Vidalia High school, Smith & Padgett, Ouachita National Bank Bldg., Monroe, archts. CD 4/28.

N. C., Charlotte—COMMUNITY CENTER—B.A. 4/14—Charlotte Park & Recreation Comn., City Hall, Third Ward Community Center. Plans deposit $25, A. G. Odell, Jr. & Assoc., 109 W. 3 St., engrs. and archts.

O., Cincinnati—HOSPITAL—B.A. 4/14—Dpt. P. Wks., S. O. Linzel, Dir., Columbus, "B" type bldg., Longview State Hospital, H. G. Allen, 705 Ohio Depts. Bldg., Columbus, archt. CD 9/2.

† Okinawa, Ryukus Islands—HOUSES—B.A. On Or About 4-15—U. S. Eng., APO 331, San Francisco, Calif., 100 family type masonry block houses and outside utilities.

Ill., Amboy—SCHOOL—B.A. About 4/15—Amboy Unit School Dist. 272 of Lee Co., Amboy Amboy High School addn., remodeling $325,000. Gilbert A. Johnson American Natl. Bank Bldg., Rockford, archt. and engr.

▲ Calif., Modesto—SCHOOL—B.A. 4/17—Modesto Bd. Educ., 14 and I Sts., rein.-con. Thomas Downer High School, $1,000,000. Plans deposit $50, Harry J. Devine, 1012 J St., Sacramento, archt. CD 3/26.

† N. M., Los Alamos—SCHOOL—B.A. About 4/18—U. S. Atomic Energy Comn., Los Alamos, 2nd North Community School, Approx. $400,000-$600,000. Plans deposit $50. CD 3/15/49 under LB.

▲ Calif., Porterville—INSTITUTION—B.A. 4/18—State Div. Architecture, P. Wks. Bldg., Sacramento, (1) general contract (2) electrical work (3) plumbing (4) heating and ventilating (5) combined heating, ventilating and plumbing, thirteen 1 story 175,000 sq. ft. State Institution for Epileptics, $5,000,000. Plans deposit $25, Anson Boyd, Sacramento, state archt. CD 12/9/47.

† N. M., Gonzales—CAMP SITE—B.A. 4/18—U. S. Eng., Box 1538, Albuquerque, Training Camp Site 6, Station P-7, Serial No. Eng 29-005-50-36. CD 3/20 under Unclassified.

LOW BIDDERS

▲ N. Y., Utica—MEDICAL-SURGICAL—Bureau Contracts & Accounts, Albany, Mar. 22, general contract steel and concrete hospital addn., Marcy State Hosp., Mary Rutt, Chipman & Scott Corp., 17 Battery Pl., New York, Zone 4, $3,786,000***awarding, from Caruso-Sturcey Corp., 10 Fisk Pl., Mt. Vernon, $353,000***sanitary work from Novak & Rehner Inc., 623 Tenth Ave., New York, Zone 19, $294,700. CD 2/28.

▲† D., Cincinnati—HOSPITAL—Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash. 25, D. C., Mar. 28, Hospital Bldg. 1, approx. 4,526,000 cu. ft., Nurses and Staff Apartment Bldg. 3, approx. 152,000 cu. ft.; Attendants Quarters Bldg. No. 5, approx. 35,000 cu. ft.; Station Garage Bldg. 6, approx. 62,000 cu. ft.; Laundry Bldg. 7, approx. 120,000 cu. ft., Boiler House Bldg. 8, approx. 167,000 cu. ft., Radial Brick Chimney 9, approx. 125 ft. high, Underground Avtur Fuel Storage Bays 10, approx. 1,400 cu. ft., Underground Soft Water Reservoir 11, approx. 3,400 cu. ft., Steel Flag Pole 12, approx. 75 ft. high, etc. Spec. No. 5000, Fed. No. 2887, from John A. Johnson & Sons Inc., 270 41 St., Brooklyn, N. Y., $7,292,983***elevators, Method A, from Westinghouse Electric Corp., Providence Bank Bldg., Cincinnati, $303,685***elevators, Method B, from Otis Elevator Co., 535 Sycamore St., $278,705. CD 1/27.

CONTRACTS AWARDED

▲† Mo., Jefferson Barracks—HOSPITAL—U. S. Eng., Courthouse and Customhouse, St. Louis, Zone 1, general contract veterans Administration Hospital, CIVENG-23-065-50-63, to Peter Kiewit Sons Co., 1950 S. Colorado Blvd., Denver, Colo., $6,173,000. Bids 1/6 awarded 3/28. CD 3/27, under LB.

▲ Pa., Johnstown—HOUSING—Johnstown Housing Auth., Johnstown State Housing Proj. 3, 2 story, 24x59 ft., 2 apt. units brick veneer block houses, to Wilson Constr. Co., 305 Bedford St., Approx. $2,168,600. B. F. Custer, 444 Tioga St., archt. CD 1/17.

▲ Tex., Lubbock—BUILDINGS—Texas Technological College, Lubbock, main engineering, home economics, music and science bldgs. to R. F. Ball Constr. Co., 3200 W. Dallas St., Houston, $2,159,941. Bids 3/17. CD 3/27, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

Colo., Fort Morgan—HOSPITAL—B.A. 4/11—Fort Morgan Community Hospital Assoc., Ft. Morgan, 1 story, bsmt., 40 bed hospital, Approx. $250,000. Fisher & Fisher, 827 Denver Natl. Bldg., Denver, archts. and engrs. CD 4/12, under LB.

Mass., Marlboro—HOSPITAL—B.A. 4/11—Marlboro Hospital, Inc., R. C. Morse, pres., Bd. Trustees, Main St., 2 story, bsmt., brick, steel, concrete hospital addn., Union St., $700,000. Plans deposit $100, Curtis & Riley, 45 Newbury St., Boston, archts. CD 3/13.

O., Cleveland—HIGH SCHOOL—B.A. 4/11—Diocese of Cleveland, 1027 Superior St., 2 story, bsmt., C shaped, 365x155x60 ft., Boys High School and 100x220 ft. gymnasium brick steel stone E. 185 St. and Lake Shore Blvd., $900,000. Stickle, Kelly & Stickle, 2422 Prospect St., archts. CD 9/23.

Mich., Detroit—SCHOOL—B.A. 4/12—St. Suzanne Parish, Rev. Victor Lorenz, pastor, c/o McGrath & Dohmen, archts., 2631 Woodward Ave., 2 story, bsmt., 70x154 ft., masonry, structural steel school addn., $250,000.

Wis., Wausau—CHURCH, etc.—B.A. 4/12—St. Annes' Parish, Wausau, 1 story, 56x130 ft. church and 1 story, bsmt., 56x260 ft. school, steel, brick, blocks, cut stone, J. A. Obel, c/o Lyle & Tarnutzer, archts.

Calif., San Rafael—SCHOOL, etc.—B.A. 4-14—Dominican College, San Rafael, 16-room school and dormitory. Approx. $250,000. Plans deposit $35. Leonard F. Starks, 316 Native Sons Bldg., Sacramento, archt.

Neb., Plattsmouth—HOME—B.A. 4-15—Nebraska Masonic Home, Plattsmouth, home adn. Approx. $400,000. John Latenser & Sons, 1307 Farnam St., Omaha, archts. CD 6-4-49.

Tex., Houston—DWELLINGS—B.A. 4-15—Bell Lake Sub-Division, c/o 3816 Erie St., 99 dwellings. B. L. Durst, 3816 Erie St., engr. CD 3-20.

Calif., Modesto—CHURCH—B.A. 4-14—First Christian Church of Modesto, Modesto, 2 and 3 story, concrete, wood church, $250,000. Plans deposit $25. Easterly, Kennewell & Easterly, 1006-A Lincoln St., Watsonville, archts.

▲ Tex., El Paso—HOSPITAL—B.A. 4-14—Mother Dolores Sister Mathilde, administrator, El Paso, 6 story, fireproof, masonry 208-bed hospital addn. $2,200,000. Miquens & Quick and Percy McGhee, 2023 First Natl. Bank Bldg., archts. CD 12-28-49.

Ill., Chicago—RECTORY—Bids Asked—St. Ferdinands Parish, 3116 N. Marmora St., 2 story, brick, concrete, stone, steel rectory. Barry & Nay, 52 W. Jackson St., archts.

▲ Pa., Pottsville—HOSPITAL—Bids Asked—Pottsville Hospital, Mahantongo and Jackson Sts., hospital addn., $1,000,000. The Ballinger Co., 122 N. Broad St., Phila., archt. CD 4-14.

▲ Tex., Houston—DWELLINGS—Bids Asked—Riverton Realty Co., Sunnyside Gardens, c/o Western Constructors, Inc., 4624 S. Main St., 50 dwellings, Sunnyside Addn., $325,000; 75 addtl. Negro dwellings, various locations, $475,000; 60 dwellings, 6th addn., Rio Chocolate Gardens, $362,000; 52 dwellings, Bear Shores Bayou, $350,000; J. R. Tator & Assoc., Union National Bank Bldg., archts. Robert Atkinson, 1st. Natl. Bank Bldg., engr. CD 3-8.

SOON LETS CONTRACT

▲ D. C., Wash.—HOSPITAL—Children's Hospital, 13 and V Sts. N. W., soon lets contract 5 story, reinforced concrete hospital behind old structure and remodeling present bldg. as wing, 13 St. and 13 St. N.W., $2,500,000. Fox & Sawyer, 1309 14 St. N.W., archts. CD 2-7.

O., Glendale—MOTHER'S HOUSE—Edward J. Schulte, agent, 812 E. McMillan St., Cincinnati, soon lets contract 2 story, Tudor, stucco on tile brick under stock, mothers house, for Sheridan Roman Catholic Missionary Association Rd., $500,000. W. W. Bodenstein & Schuster, 2nd Natl. Bank Bldg., Cincinnati, engrs. CD 10-11-48. Noted 1-6

▲ O., Lakewood—HIGH SCHOOL—George S. Rider, archt., 3600 Terminal Tower, Cleveland, soon lets contract 2 and 3 story, school, 4 story addn. to rectory and 2 story gymnasium, brick, steel, concrete, Detroit Ave. and Nicholson Sts., for St. Edwards High School, 14205 Detroit Ave., Zone 7, $1,000,000. CD 9-6.

Pa., Phila.—SCHOOL—B.A. 3-28—Henry D. Dagit & Sons, archts., 1327 Race St., soon lets contract, school for St. Hubert's Catholic Girls High School, 225 N. 16 St. Approx. $500,000.

Wash., Everett—HOSPITAL—Everett General Hospital, soon lets contract 3 story, plans, 47x92 ft. and 44x48 ft. reinforced hospital addn., $900,000. J. W. Maloney, Central Bldg., Seattle, Zone 4, archt. CD 3-17-49.

LOW BIDDERS

▲ N. Y., New York—APARTMENT—Owner, c/o contractor, Paul Tishman Co., Inc., 595 Madison Ave., project abandoned, 25 story department, Madison Ave., 91 to 92 sts. $6,500,000. CD 9-17, under CA.

CONTRACTS AWARDED

▲ Calif., North Long Beach—DWELLINGS—Lakewood Park Corp., 3435 Long Beach Blvd., South Gate, land improvements, 2,000 dwellings on 330 acre tract, own forces, $125,000,000. Southwest Drafting Service, 2724 W. Florence Blvd., Los Angeles, archts., Engineering Service Corp., 1127 W. Washington St., Los Angeles, engrs.

▲ Conn., Wallingford—HOUSING—Eastern Constr. Co., 207 Main St., Hartford, 204 Knox houses, E. Main St., owner builds, $2,000,000. CD 3-23.

▲ Mo., Kansas City—APARTMENTS—Lewis E. Kitchen, 1016 Baltimore Ave., Zone 6, 3 apartments, Jefferson St., 9 to 10 Sts., 1 apartment, Jefferson St., 10 to 11 Sts., 1 apartment, Jefferson St., 10 to 11 Sts., Center Constr. Co., Fairway Exchange Bldg., Kansas City, Mo., Approx. $5,000,000. Jesse Leick, 6225 Brookside Road, Zone 2, archt.

▲ Mo., St. Louis—HOUSING—Thec Housing Corp., 30 Rockefeller Plaza, New York, 25, N. Y., 1,000 to 2,000 family unit, concrete, Nepco Housing, owner builds, $6,000,000-$15,000,000.

▲ N. J., Closter—HOUSING—Lowe Bldg. Co., c/o Frederick G. Hansen, 2nd., Summit St. and E. Railroad Ave., Tenafly, 450 one family houses on 136 acre tract bounded by Piermont Rd., Hickory Tree Rd., Closter and Homan Aves., owner builds, $5,000,000.

▲ N. Y., Forest Hills—APARTMENTS—Phil & Lou Co., Inc., c/o Arthur Weiser, archt., 20 E. 43 St., New York, Zone 22, 4 to 6 story apartments in area bounded by Yellowstone Blvd., 66 Ave., 108 St. and 67 Ave., owner builds, $2,000,000. CD 3-16.

▲ O., Cincinnati—APARTMENTS—Warner-Kanter Co., 216 Engine Bldg., Birmingham, Ala., 2 and 2 story homes, concrete, brick apartments, to McDonald Ave., 1629 W. Pike St., St. Louis, Mo., $3,000,000. Correction—contractor, CD 3-2, under CA.

THREE REASONS WHY MOST CONTRACTORS PREFER Thor

PAVING BREAKERS

THEY GET THE WORK DONE!

Short-Travel tubular valve, precision balance of working parts turns every last ounce of AIR POWER into STRIKING POWER.

LESS MAINTENANCE

Exclusive Thor design and processing methods assure endless life for operating parts . . . reversible block type piston provides perfect striking surface . . . drop forgings throughout.

EASIER HANDLING

The tool does all the work! Perfect balance reduces vibration. Latch retainer simplifies steel change.

Full range of sizes—32 lb., 50 lb., 70 lb. and 84 lb. Breakers, plus Sheeting Driver and two sizes of Spike Drivers. Free tests on your job at our expense! Independent Pneumatic Tool Co. (Thor Tools), Aurora Ill.

BUY IT from your DISTRIBUTOR

... Thor PORTABLE POWER TOOLS

ELECTRIC • PNEUMATIC

▲ **Wis., Milwaukee** — SCHOOL—Divine Savior High School, 3516 W. Center St., Zone 10, general contract 4 story, 65x240 ft. parochial high school, 64x148 ft. gymnasium, and 36x115 ft. chapel, to Humzinger Constr. Co., 4541 N. 124 St. Total est. $1,250,000. Bids 3/3. CD 2/27.

▲ **Pa., Darby**—RESIDENCES—Adam B. McClatchy, 69 and Walnut Sts., Upper Darby, residential development, Sharon Ave. and Hook Rd., separate contracts. $2,100,000. Erling H. Wenge, McClatchy Bldg., Upper Darby, archt.

INDUSTRIAL BUILDINGS

BIDS ASKED

N. C., Sanford—WAREHOUSE, etc.—B.A. 4/12—Central Electric Membership Corp., Sanford, warehouse and office. Plans deposit $25. Southern Eng. Co., 1000 Crescent Ave. N. E., Atlanta, Ga., archts.

Ont., Bradford—STORAGE—B.A. 4/14— Co-Operative Storage Ltd., Bradford, cold storage addn. $70,000. E. H. Darling, 512 Pigott Bldg., Hamilton, engr.

CONTRACTS AWARDED

▲ **Ga., Macon**—MILL—Ralston Purina Co., 838 S. 8 St., St. Louis 2, Mo., 70x275 ft., reinf.-con. feed mill, incl. 5 story mill section, 2 story warehouse section, 125 ft. bin storage section, to Milling Engineers, Inc., 1911 Baltimore Ave., Kansas City, Mo. Approx. $1,000,000. CD 2/16.

▲ **Ia., Fort Madison**—PLANT—Sheaffer Pen Co., Fort Madison, plant addn., to The Austin Co., 16112 Euclid St., Cleveland, O. $2,500,000.

▲ **Kan., Kansas City**—PLANT—International Harvester, 180 Michigan Ave., Chicago, Ill., 200,000 sq. ft. Service depot, 348,000 sq. ft. machine transfer and distr. office bldg., Fairfax Distr. Plant, to Collins Constr. Co., 15 W. 10 St., Kansas City, Zone 6, Mo., $2,000,000. Bids 3/6, awarded 3/21. CD 2/23.

▲ **Cleveland**—ENGINE ASSEMBLY—Ford Motor Co., 3000 Schaefer Rd., Dearborn, Mich., structural steel for engine assembly plant, to Bethlehem Steel Corp., General Motors Bldg., Detroit, Mich. $10,000,000. E. A. Fairbrother & Co., and George Nichols, 345 New Center Bldg., Detroit, Mich., engrs. and archts. Albert Kahn Assoc. Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., consult. engr. CD 2/2.

▲ **Tex., Longview**—PLANT—Tennessee Eastman Corp., Longview, chemical (cellulose) mfg. plant, to Chicago Constr. Co., Longview. Approx. $1,125,000. CD 6/3.

UNCLASSIFIED

BIDS ASKED

† **Md., Annapolis**—BORINGS—B.A. 4/11—U. S. Naval Academy, Naval Eng. Experimental Station, Spec. 23428, incl. 11 borings. Plans deposit $10.

Pa., Pittsburgh—VENTILATION BLDGS.—B.A. 4/14—State Hy. Dpt., 506 N. Office Bldg., Harrisburg, completing 2 ventilation bldgs. at and over portals of Squirrel Hill Tunnel, said work to consist of entire constr. of said bldgs. above level of electrical floor and construction of such items below level of this floor which were not included in previous contracts, L. R. 763, (4-2). T. R. U. S. 22-30. Plans deposit $17.50. E. L. Schmidt, c/o owner, ch. engr.

Wash., Spokane—STADIUM—B.A. 4/24—Licensed Clubs Stadium Corp., Carl Carlson, chr., W. 57 26 St., steel, concrete football stadium, $500,000. Moffatt, Nichol & Taylor, Hyde Bldg., archts. CD 11/18.

La., New Iberia—EXHIBIT BLDG.—B.A. About 4/15 Louisiana Sugar Cane Festival & Fair Assn., c/o Dan J. Sautowell, archt., 328 W. Main St., exhibit bldg. $150,000. Plans deposit $25. CD 8/8.

Ia., Cedar Rapids—STADIUM—B.A. 4/17—Bd. Educ., stadium, Veterans Memorial Field. $500,000. Wm. Stunz, 46 Av. and 23 St., Rock Island, Ill., archt. CD 1/17.

† **Louisiana**—RADIO BEACON STATION—B.A. 4/17—U. S. Coast Guard, 326 Customhouse Bldg., New Orleans, constr. Coastal Radio Beacon Station.

† **N. M., Gonzales**—UTILITIES—B.A. 4/17—U. S. Eng., Box 2538, Albuquerque, chain link and barbed wire fence, roads, parking areas paving, concrete sidewalks, surface storm drainage facilities, electrical distr. sys., water distr. sys., incl. drilling water supply well, steam heating sys., sanitary sewerage sys., Spec. No. DC-2-025-50-16. Approx. $100,000. Plans deposit $50 for one item or $50 for complete project. Extended date. CD 3/16.

▲ **Colo., Denver**—PARKING STRUCTURE—B.A. 4/18—City and Denver Co., City and County Bldg., one multi-story 150x120 ft. off-street parking structure. Alfred J. Ryan, 1340 Glenarm, Denver, Colo., archt. and engr. CD 10/27.

† **Washington**—GENERATORS—B.A. 4/18—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, design, manufacture, delivery, installation and testing four 67,500 kva. generators for Chief Joseph Dam powerhouse, Bridgeport, CIVENG-50-51. Extended date. CD 1/24.

CONTRACTS AWARDED

▲† **Oregon**—GENERATORS—U. S. Eng., 19 and E. Poplar St., Walla Walla, Wash., four 71,625 kva. alternating current generators for McNary Dam powerhouse, to General Electric Co., River Rd., Schenectady, N. Y., $6,556,290. Bids 3/2. CD 1/3/50.

Proposal Advertisements see pp. 84 to 88 & 97

OFFICIAL PROPOSALS

Bids: May 1, 1950 (675)

Approach to Bridge

DELAWARE RIVER JOINT TOLL BRIDGE COMMISSION
526 Broad Street, Bank Building
Trenton 8, New Jersey

NOTICE TO CONTRACTORS

Sealed Proposal for the Construction of the Easton Approach to the Bushkill Street Bridge between Easton, Pennsylvania and Phillipsburg, New Jersey, will be received by the Delaware River Joint Toll Bridge Commission at its office, 526 Broad St. Bank Building, Trenton 8, New Jersey, until eleven o'clock (11:00) A.M., Eastern Standard Time, on the 1st day of May 1950, at which time and place all bids will be publicly opened and read aloud.

After Wednesday April 5, 1950 instructions to bidders, form of proposal, form of contract, form of performance bond, plans, and specifications may be examined at the Office of the Commission, above address, or Phillipsburg, New Jersey, or at the office of the J. E. Greiner Company, 1201 St. Paul Street, Baltimore 2, Maryland, and copies thereof obtained upon payment of $10.00 for each set, which amount is not returnable.

Each bid must be accompanied by a certified check in the amount of sixty-five thousand dollars ($65,000), made payable to the Delaware River Joint Toll Bridge Commission, which amount shall be forfeited as liquidated damages if the Bidder fails, within ten (10) consecutive calendar days after written notice that the bidder has been awarded the contract to enter into a written contract with the Commission in accordance with the accepted bid, and to give a performance bond satisfactory to the commission, equal to one hundred percent (100%) of total amount of the contract.

The commission reserves the right to waive any informalities in the bids received; to reject any or all bids; and to award the contract only to those experienced in this class of work, and to the bidder whose proposal is deemed by the commission to be most advantageous to public interest.

Delaware River Joint Toll Bridge
Commission by Alexander R. Miller, Chairman of Commission.

Date April 1, 1950

Bids: April 20, 1950 (673)

Construction of Road

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

PITTSTOWN-EVERETTSTOWN ROAD

Construction of Pittstown-Everettstown Road from Pittstown to Nelson's Corner, Alexandria Township, Hunterdon County, Federal Aid Secondary Project No. S-128(1). Length 2.732 miles.

Estimated:

45,717 cu. yds. Roadway Excavation-Earth
1,500 cu. yds. Roadway Excavation-Rock
5,200 cu. yds. Channel Excavation
5,500 cu. yds. Subbase
35,600 sq. yds. Macadam Base Course 4" Compacted
37,000 sq. yds. Mod. Pen. Macadam 3" thick
2,500 tons Bituminous Concrete, Type A or T
1,056 lin. ft. Drainage
2,225 lin. ft. Beam Guard Rail

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, N. J., on Thursday, April 20, 1950, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised Financial Statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Secondary Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and Supplements, and by Sections 2, 3 and 4 P. L. 1944, 78th Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, Municipal Building, South Main Street, Phillipsburg, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to common labor employed on this contract shall be 75¢ per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J. and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

Bids: May 9, 1950 (674)

Intake Structure and Raising Earth Dam

CITY OF NORWALK, CONNECTICUT
SECOND TAXING DISTRICT

Sealed bids will be received in accordance with the law by the District Commissioners of the Second Taxing District of the City of Norwalk, Connecticut until 2:00 o'clock, P.M. Daylight Saving Time on the Ninth day of May, 1950, at the office of the District Commissioners of the Second Taxing District, City Hall, Norwalk, Connecticut, for furnishing materials and performing the labor for Improvements to City Lake Reservoir, all in accordance with plans and specifications prepared by Buck, Seifert and Jost, Consulting Engineers, 112 E. 19th Street, New York 3, New York.

Copies of the plans and specifications may be obtained either from the office of the District Commissioners or from the Consulting Engineers upon deposit of Twenty-Five Dollars ($25.00) for each set, which will be refunded upon return of the plans and specifications in good condition within ten (10) days after the date on which bids are received or else the entire deposit will be forfeited.

The work to be performed is divided into two (2) sections, under which the work is classified according to its character.

Bidders will be allowed to bid on one (1) or both sections and will be allowed to enter a combined bid on both sections.

The work to be done includes all materials and labor, tools, plant and equipment necessary for constructing, installing and completing, ready for operation, the following elements.

SECTION A: DAM AND DIKES, including raising the existing earth dam seven (7) feet, raising the existing earth west saddle dike nine (9) feet and raising the existing earth Wilton Road dike five (5) feet, including slope riprap protection and toe fills of rock, construction of a concrete spillway channel and concrete cornwall, alterations to existing piping and structures.

SECTION B: INTAKE SCREEN CHAMBER AND BRIDGE, including construction of a reinforced concrete intake chamber in City Lake Reservoir and connection of the chamber to the existing piping.

Each proposal must be accompanied by a certified check payable to the Second Taxing District, Norwalk, Connecticut or bid bond from a reliable surety company authorized to do business in the State of Connecticut and satisfactory to the Commissioners, in amount equal to fifteen (15%) per cent of the proposal. The certified checks will be retained to pay for any damage or loss to the Commissioners, or the liability bond will accrue in case the successful bidder shall neglect or refuse to

(Continued on page 85)

OFFICIAL PROPOSALS
(Continued from page 84)

enter into a contract in accordance with his proposal.

The Commissioners reserve the right to consider bids for fifteen (15) days after their receipt before awarding any contract and the right is reserved to accept any bid or to reject any or all of them.

DISTRICT COMMISSIONERS
SECOND TAXING DISTRICT
CITY OF NORWALK,
CONNECTICUT
D. WILLIAM HARFORD,
Commissioner
IRVING C. JENNINGS,
JAMES DONNELLY,
ELMER BRACKEN, General Manager
BUCK, SEIFERT and JOST
Consulting Engineers

Bids: April 25, 1950 (671)

Refuse Incinerator Plant

NOTICE TO BIDDERS

REFUSE INCINERATOR PLANT FOR THE SANITATION AREA OF THE TOWN OF CORTLANDT, WESTCHESTER COUNTY, N. Y.

SEALED BIDS will be received by the Town Board of the Town of Cortlandt, at the office of the Town Clerk in the Municipal Building, Croton-on-Hudson, N. Y., until 8:00 P.M. eastern standard time, on Tuesday April 25th, 1950, for Designs, construction and installations necessary to establish at the Town Incinerator site, complete with all equipment and appurtenances and ready for use, an incinerator plant building complete, together with main breeching housing and chimney, rough grading and all excavation and backfill, sewage and drainage lines and accessories and all plumbing and necessary electrical work. It shall also include the installation complete in the plant building of one incinerator unit having a capacity of 36 tons per 24 hours and consisting of one furnace with dumping grates, ash hoppers, ash gates and ash cart and track, and other work incidental thereto.

Pamphlets containing information for bidders, forms of bid and general specifications may be obtained at the office of the Town Engineer, 306 South Street, Peekskill, N. Y. on and after Wednesday, April 19th, 1950.

Each bidder must deposit with his bid a certified check in the amount of $1000.00, subject to the conditions provided in the information for bidders.

The maximum amount to be spent upon this project shall not exceed the sum of Sixty-five thousand dollars ($65,000.00) and no bid will be considered in excess of said sum.

The Town Board reserves the right to reject any or all bids, or to accept that bid, acceptance of which will, in the judgment of the Town Board of the said Town, best secure the public interest and efficient work.

No bidder may withdraw his bid within forty-five (45) days after the opening thereof.

JAMES H. FERRIS
TOWN CLERK, TOWN OF
CORTLANDT
Dated, March 29th, 1950

Bids: May 4, 1950 (670)

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for:

CONTRACT NO. 17

The work to be done under this Contract involves the construction of the superstructure steelwork in connection with the construction of the New Jersey Turnpike across the Hackensack River, near Laurel Hill, Hudson County, New Jersey.

Principal items of work include:

Structural Carbon Steel	29,000,000 Lbs.
Structural Silicon Steel	17,000,000 Lbs.
Metal Railing	11,400 Lin. Ft.
Open Grating	14,000 Sq. Ft.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, after April 3, 1950, at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and at the office of the Consulting Engineers, Howard, Needles, Tammen and Bergendoff, 55 Liberty Streets, New York, New York.

Contract documents will be furnished for $5.00 for each set, upon application to the Authority. The payment will not be refunded and contract documents are not required to be returned. Plans showing grading cross sections may be examined at the office of the Authority or at the office of the Engineers.

Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey until 10:30 o'clock on the morning of May 4, 1950 and thereafter in the Veterans Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey, until 11:00 A.M. on the same date, at which latter time and place said proposals will be publicly opened and read.

CONTRACT NO. 20

The work to be performed under this contract involves the furnishing, fabrication and erection of the superstructure steel work to be placed upon concrete piers and abutments which are now being or will be constructed under Contract No. 14A South Approach Piers and Abutment, Contract No. 5 Main River Piers and Foundations, and Contract No. 14B North Approach Piers and Abutment, between centerline stations 466+45.16 and 535+95.41 and other incidental work in connection with the construction of the Passaic River Bridge which will form a part of the New Jersey Turnpike in the City of Newark in Essex County and the Town of Kearny in Hudson County, respectively.

Principal items of work include:

Structural Carbon Steel	26,500,000 Lbs.
Structural Silicon Steel	14,300,000 Lbs.
Castings	422,000 Lbs.
Open Steel Gratings	41,600 Sq. Ft.
Metal Railings	14,000 Lin. Ft.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, after March 31, 1950 at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and at the office of the Engineers, Ammann & Whitney, 270 Market Street, Newark, New Jersey, or 76 Ninth Avenue, New York 11, New York.

Contract documents will be furnished for $5.00 for each set, upon application to the Authority. The payment will not be refunded and the contract documents are not required to be returned. A set of Reference Drawings comprising Contract Nos. 5 and 14 will be furnished for $5.00 upon application to the Authority at 65 Prospect Street, Trenton 8, New Jersey. The payment will not be refunded, and the Reference Drawings are not required to be returned.

Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey until 10:30 o'clock of the morning of April 27, 1950 and thereafter in the Veterans Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey until 11:00 A.M. on the same date, at which latter time and place said proposals will be publicly opened and read.

* * *

The receipt and opening of proposals are subject to proper prequalification of bidders in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal revised financial statements and statements of plan and equipment.

Proposals must be made upon the standard proposal forms in the manner designated by the Consulting Engineers for Construction of the New Jersey Turnpike and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the contract on the outside and must be accompanied with a certified check drawn to the order of the New Jersey Turnpike Authority *and a proposal bond, each for not less than five per cent of the amount of the proposal* but not less than $5000.00 nor more than $200,000.00, and must be delivered at the office aforesaid at the place on or before the hour named. Copies of the proposal form to be used for submitting proposals, of the form for proposal bond of the form to be used for financial statement and plan and equipment statement to be submitted with proposal and the special addressed envelope are furnished in detached form with the Contract Documents.

The Contracts will be awarded or proposals rejected within fifteen (15) days from the date of opening proposals. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

March 31, 1950

OFFICIAL PROPOSALS

Bids: May 3, 1950 (672)

Construction of Portion Expressway

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
DEPARTMENT OF FINANCE
DIVISION OF PURCHASES
NOTICE TO ROAD AND BRIDGE CONTRACTORS

Sealed Proposals addressed to the Division of Purchases, for the construction of the following project will be received by the Division of Purchases at the office of the State Purchasing Agent, Room 122 State House, Smith Street, Providence, Rhode Island, until 8:00 A.M. (EDST), on the 3rd day of May, 1950, at which time they will be opened and read in public.

R. I. Contract No. 5005, R. I. Federal Aid Project No. I-UG-F143(1), County of Providence, Olneyville Square, Providence, Rhode Island. Construction of a portion of Expressway from end of CONTRACT ONE to the end of CONTRACT TWO at Westminster Street, including Viaducts over railroad, two underpasses at Westminster Street, paving and incidentals in CONTRACT ONE and CONTRACT TWO areas, Service Road Nos. 1, 2, 3, 4 and 5, signs, walls and all other appurtenant items of work.

Bids for the above work must be made on blanks furnished by the Department of Public Works, Division of Roads and Bridges. Plans and specifications and Special Provisions may be examined at Room 122 State House or Room 220 State Office Building, Providence, Rhode Island, on and after Wednesday, April 5, 1950, every week day except Saturdays and Holidays, between the hours of 8:30 A.M. and 4:30 P.M. Blanks for submitting proposals may be obtained at the office of the State Purchasing Agent at the address above stated. A deposit of $100.00 shall be made for each set of contract documents. $50.00 will be refunded if plans and specifications are returned in good condition prior to May 24, 1950.

A certified check or bid bond payable to the State of Rhode Island, or cash in the amount of $100,000 must be furnished by each bidder.

This Proposal Guaranty will be returned after the Contract has been executed. A performance bond of one hundred (100) percent of the contract price with a satisfactory surety company will be required of the successful bidder. The Director of Purchases reserves the right to reject any or all bids.

FEDERAL REQUIRED CONTRACT PROVISIONS. The attention of prospective bidders is called to the fact that this project is to be bid upon as the contract executed under the rules and regulations for carrying out the Provisions of the Federal-Aid Highway Act of 1944 and the Special Provisions, dated July 2, 1948, as amended and supplemented, as required by the Department of Commerce, Bureau of Public Roads.

EMPLOYMENT LISTS. A local employment service has been designated by the R. I. Employment Service to prepare the employment lists for the project. Requests for men to be employed on this project shall be submitted to the District Office at 112 Union Street, Providence, Rhode Island.

WAGES OF LABOR. In conformity with the provisions of Chapter 250 and 251, General Laws, 1938, the minimum wages for a day's work paid craftsmen, teamsters and laborers shall not be less than the customary and prevailing rate of wages for a day's work in the same trade or occupation in the locality where the work is undertaken. Such a schedule of wages has been established on a minimum hourly basis and is on file in the office of the State Department of Labor. The contractor shall pay not less than these minimum wage rates.

The attention of bidders is invited to the fact that the R. I. Department of Public Works, Division of Roads & Bridges has been advised by the Wage and Hour Division, U. S. Department of Labor, that contractors engaged in highway construction work are required to meet the provisions of the Fair Labor Standards Act of 1938-52 Stat. 1060 (29 U.S.C. 201).

SUBLETTING OR ASSIGNING THE CONTRACT. The attention of Bidders is directed to the Standards and/or Special Provisions covering subletting or assigning the contract.

DEPARTMENT OF FINANCE
DIVISION OF PURCHASES
By: FRANKLYN A. ADAMS
State Purchasing Agent

(Continued on page 86)

OFFICIAL PROPOSALS
(Continued from page 85)

Bids: April 18, 1950 (660)

Electrical Systems

PENNSYLVANIA TURNPIKE COMMISSION
Harrisburg, Pennsylvania
NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 A.M. (Eastern Standard Time), the 18th day of April 1950, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and publicly opened and read aloud, for the following contract and/or contracts:

For the construction of Electrical Systems for the following nine (9) Utility Buildings, Toll Plazas and Interchanges on the Pennsylvania Turnpike as follows:

Contract No.	Name	Connecting Route	County
230-C	Carlisle	U. S. 11	Cumberland
231-C	Harrisburg West Shore	U. S. 111	York
232-C	Harrisburg East	U. S. 230	Dauphin
233-C	Lebanon-Lancaster	T. R. 72	Lancaster
234-C	Reading	U. S. 222	Lancaster
235-C	Morgantown	U. S. 122	Berks
236-C	Downingtown	Rt. 100	Chester
237-C	Valley Forge	(Several)	Chester
330-C	Pittsburgh	U. S. 22	Allegheny

The work to be performed under the contract is generally in the Utility Building, Toll Plaza and Interchange above mentioned and enumerated, and does not include the plumbing systems, the heating systems, nor building construction except as noted in the Specifications or as shown on the Contract Drawings.

Copies of plans and specifications and other contract documents, including Reference Drawings will be on file and open to public inspection at the Offices of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, on or about April 4, 1950. Copies of Reference Drawings may be purchased from the Pennsylvania Turnpike Commission for the sum of Five ($5.00) Dollars per set.

Plans and specifications may be obtained from the Commission upon deposit of Ten ($10.00) Dollars for each set, such deposits to be refunded in full to any actual bidder upon return of such documents in good condition within five (5) days after the date of the opening of the bids. Refund will be made for all plans and specifications returned, if the project is withdrawn from letting by the Pennsylvania Turnpike Commission. Remittances are payable to the Pennsylvania Turnpike Commission and must accompany requests for contract drawings and specifications.

The Pennsylvania Turnpike Commission reserves the right to award each contract as a separate contract or in any combination of contracts.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
March 24, 1950

Bids: April 18, 1950 (661)

Construction of Building and Plaza

PENNSYLVANIA TURNPIKE COMMISSION
Harrisburg, Pennsylvania
NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 A.M. (Eastern Standard Time), the 18th day of April, 1950, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and immediately publicly opened and read aloud, for the following contract and/or contracts:

For the construction of Utility Building and Toll Plaza; setting of Toll Booths and erection of Canopy, at the Interchanges listed below:

Contract No.	Name	Connecting Route	County
230-A	Carlisle	U. S. 11	Cumberland
231-A	Harrisburg West Shore	U. S. 111	York
232-A	Harrisburg East	U. S. 230	Dauphin
233-A	Lebanon-Lancaster	T. R. 72	Lancaster
234-A	Reading	U. S. 222	Lancaster
235-A	Morgantown	U. S. 122	Berks
236-A	Downingtown	Rt. 100	Chester
237-A	Valley Forge	Several	Chester
330-A	Pittsburgh	U. S. 22	Allegheny

The work to be performed under this contract consists of the construction of the Utility Building, reinforced cement concrete basement walls, pavements, footings, etc., erection of Toll Booths and Canopy, and all work incident thereto, at points on the Turnpike known as the Interchanges above mentioned and enumerated, not including, however, the plumbing, the heating system, the electrical work, or the seeding and sodding; except as noted in the specifications or as shown on the contract drawings.

Copies of plans, specifications, and Contract Documents, are on file and open to public inspection at the Offices of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, on or about April 4, 1950.

Plans and Contract Documents may be obtained from the Commission upon deposit of Ten ($10.00) Dollars for each set, such deposits to be refunded in full to any actual bidder upon return of such documents in good condition within five (5) days after the opening of the bids. Refund will be made for all plans and specifications returned, if the project is withdrawn from letting by the Pennsylvania Turnpike Commission. Remittances are payable to the Pennsylvania Turnpike Commission and must accompany requests for drawings and specifications.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of Five ($5.00) Dollars per copy.

The Pennsylvania Turnpike Commission reserves the right to award each contract as a separate contract or in any combination of contracts.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
March 24, 1950

Bids: April 18, 1950 (662)

Plumbing Systems

PENNSYLVANIA TURNPIKE COMMISSION
Harrisburg, Pennsylvania
NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 A.M. (Eastern Standard Time), the 18th day of April 1950, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and publicly opened and read aloud, for the following contract and/or contracts:

For the construction of Plumbing Systems for the following nine (9) Utility Building and Toll Plazas on the Pennsylvania Turnpike as follows:

Contract No.	Name	Connecting Route	County
230-A	Carlisle	U. S. 11	Cumberland
231-A	Harrisburg West Shore	U. S. 111	York
232-A	Harrisburg East	U. S. 230	Dauphin
233-A	Lebanon-Lancaster	T. R. 72	Lancaster
234-A	Reading	U. S. 222	Lancaster
235-A	Morgantown	U. S. 122	Berks
236-A	Downingtown	Rt. 100	Chester
237-A	Valley Forge	Several	Chester
330-A	Pittsburgh	U. S. 22	Allegheny

The work to be performed under the contract is generally in the Utility Building and Toll Plaza above mentioned and enumerated. The work does not include the Electrical Systems, the heating systems, nor building construction except as noted in the specifications or as shown on the Contract Documents.

Copies of plans and specifications and other contract documents, including Reference Drawings, will be on file and open to public inspection at the Offices of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, on or about the 4th of April 1950. Copies of Reference Drawings may be purchased from the Pennsylvania Turnpike Commission for the sum of Five ($5.00) Dollars per set.

Plans and specifications may be obtained from the Commission upon deposit of Ten ($10.00) Dollars for each set, such deposits to be refunded in full to any actual bidder upon return of such documents in good condition within five (5) days after the opening of the bids. Refund will be made for all plans and specifications returned, if the project is withdrawn from letting by the Pennsylvania Turnpike Commission. Remittances are payable to the Pennsylvania Turnpike Commission and must accompany requests for contract drawings and specifications.

The Pennsylvania Turnpike Commission reserves the right to award each contract as a separate contract or in any combination of contracts.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
March 24, 1950

Bids: April 18, 1950 (668)

Furnishing and Delivering Disc Water Meters

WASHINGTON SUBURBAN SANITARY COMMISSION
CONTRACT No. 761-W

Sealed proposals for furnishing and delivering 2,000 ⅝-inch, 50 ¾-inch, 100 1-inch and 100 1½-inch disc water meters will be received at the office of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland until Monday, April 10th, 1950 at 2:10 P.M. Eastern Standard Time, at which time and place they will be publicly opened and read.

Specifications may be obtained from W. R. Douglas, Purchasing Agent of the Commission, Hyattsville, Maryland.

Dwight B. Galt, Chairman
Warren Browning
Leland G. Worthington
Commissioners

Bids: April 10, 1950 (669)

Sewage Treatment Plant

SEWERS

The Municipal Authority of the Borough of Mifflinburg, Pennsylvania, will accept separate sealed proposals from contractors for the construction of sanitary sewers and separate sealed proposals for the construction of a primary sewage treatment plant, until 10:00 A.M., April 17, 1950, at which time they will be publicly opened and read in the Council Chambers of the Borough of Mifflinburg, at 333 Chestnut Street.

PROPOSAL No. 1

The principal items of work will consist of the following:

- 900 feet 15" vit. clay sewer
- 93 feet 15" reinf. conc. sewer
- 7680 feet 12" vit. clay sewer
- 3530 feet 10" vit. clay sewer
- 10790 feet 8" vit. clay sewer
- 2600 feet 6" vit. clay services
- 78 brick manholes
- 4240 cu. yds. rock excavation

Engineer's Estimate $129,000.00

PROPOSAL No. 2

The principal items of work will consist of the following:

- 1431 cu. yds. structural excavation
- 636 cu. yds. structural concrete
- Pump & control house
- 10 comminutor
- 2-250 gpm. sewage pumps
- 6-12" cast iron pipe & fittings
- 24'x 90' glass enclosure

Engineer's Estimate $82,500.00

Plans, specifications, and proposals may be inspected at the above office or at the office of S. R. Collins Consulting Engineer, R. D. 2, Lewisburg, Pa., or may be secured from the latter at a cost of $10.00 per set which is not refundable.

A certified check in the amount of 5% of the total bid price must accompany each proposal.

Contract will be awarded within one calendar month of date of letting. The Authority reserves the right to hold proposal and checks of the two low bidders on each project, pending sale of bonds, until award is made. The Authority also reserves the right to reject any or all bids.

Kenneth A. Bullock, Secretary
The Municipal Authority of the Borough of Mifflinburg,
333 Chestnut Street
Mifflinburg, Pennsylvania.

(Continued on page 87)

OFFICIAL PROPOSALS
(Continued from page 86)

Bids: April 12, 1950 (665)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Chapter 63, Laws of 1936, as amended, sealed proposals will be received until seven-thirty o'clock A.M., eastern standard time on the 12th day of April, 1950, by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the elimination of the following grade crossing in Steuben County.

Contract No.	Type	Name of highway and miles	Bid Dep. plans	Dept. deposit	Estimate
PSC 9418	Relocating R. R. tracks; raising of grade of tracks with crossings of Grand Island Central R. R. over new pavement & asph. concrete spd. including 20 R. R. bridge structures; 3 pedestrian subways; 2 highway bridge structures and miles incidental drainage and misc. work	Elimination of grade crossings of the Erie R. R. and the N. Y. C. R. R. with various sts. and the N. Corning and vicinity 8.20	$100	$500.000	$8,767,155

Maps, plans, specifications, and estimates may be obtained at the office of the Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineer, H. E. Brands, 56 W. Main Street, Hornell, N. Y., and may be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for the return of one set, in good condition, within 30 day of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

H. D. TALLAMY Supt. of Public Works

Bids: April 18, 1950 (658)

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for:

CONTRACT NO. 20

The work to be performed under this Contract involves the complete construction of the Superstructure of a 5-span, deck plate girder Turnpike bridge approximately 805 feet long over the Raritan River in Middlesex County.

Principal items of work include:

Structural steel, fabricated, erected, and completed in place	4,100,000 Pounds
Concrete, Class B, for deck slab and abutment backwalls	1,320 Cu. Yds.
Reinforcement Steel	310,000 Pounds
Steel bridge grating	5,850 Sq. Ft.
Steel pipe handrail	1,730 Lin. Ft.
Electrical work for navigation lights, channel span	Complete System

Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton, New Jersey, until 10:30 o'clock on the morning of April 18, 1950, and thereafter in the Veterans Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey, until 11:00 A.M. on the same date, at which latter time and place said proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a revised financial statement and a statement of plan and equipment.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, after March 28, 1950, at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton, New Jersey, and at the offices of the Engineers, Fay, Spofford & Thorndike, 11 Beacon Street, Boston, Massachusetts, and 25 Livingston Avenue, New Brunswick, New Jersey.

Contract documents will be furnished for $5.00 for each set upon application to the Authority. The payment will not be refunded and Contract documents are not required to be returned.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications for Construction of the New Jersey Turnpike and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the Contract on the outside, and must be accompanied by *a certified check* drawn to the order of the New Jersey Turnpike Authority *and a proposal bond, each for not less than five per cent of the amount of* the proposal, but not less than $500.00 nor more than $200,000.00 and must be delivered with proposal on or before the hour named. Copies of the proposal form to be used for submitting proposals, of the form for proposal bond, of the form to be used for financial statement and plan and equipment statement to be submitted with proposal, and special addressed envelope are furnished in detached form with the Contract Documents.

The Contract will be awarded or proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

March 28, 1950

OFFICIAL PROPOSALS

tions and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineer noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 3				
		Wm. Rousson, District Engineer, 301 East Water Street, Syracuse, N. Y.				
Onondaga & Madison	MT 50-1P MT 50-2P OT 50-2P OT 50-3P	Mohawk Thruway Ontario Thruway Proj. F&UT 1070(2); 1071(2)	18.39	9" Con. Conc. Pvmt. 2 at 50' Wide = 18.37 mi. Asph. Conc. Opt. = 0.02 mi (Paving on Access Rds. = 1.88 mi.)	$185,000 Plans $50.00	$3,617,000
		DISTRICT No. 4				
		A. R. Mellnick, District Engineer, Barge Canal Terminal, Rochester, N. Y.				
Monroe	FAC50-5 FAS1150-4	Rochester City; Mount Road 3.68 Boulevard Mount Road Boulevard-Lake Ontario State Parkway, Pt. 1 Proj. No. U1083-1)		Bdn. Conc. = 0.27 mi. Bdn. Conc. & Asp. Conc. Tv. 2A on Bdn. = 2.76 mi. Asph. Conc. Tv. = 2A = 0.65 mi. Widening 48' 5" Alpha I-Beam Alpha = $154.00	$140,000 Plans $100.00	$3,508,000
		DISTRICT No. 5				
		C. R. Wagers, District Engineer, 65 Court Street, Buffalo, N. Y.				
Erie	OT-FUD 50-1	Ontario Thruway, Walden 3.68 Ave. Cleveland Drive and Main St. Connection Proj. U1071-4)		9" Con. Conc. Pvmt. 2 at 37' & 25' Wide = 3.66 mi. Asph. Conc. Opt. = 0.37 mi. Incl. Access Roads, Etc.)	$80,000 Plans $25.00	$1,484,000
		DISTRICT No. 8				
		J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.				
Orange	FAS150-3P FARC50-9	Goshen-Fair Oaks, Pt. 2, S. H. 47-11 Middletown-Bloomingburg, S. H. 210 Proj. F1050-4)	3.16	9" Con. Conc. Pvmt. 2 at 24' & Var. Wide = 7.93 mi. Asph. Conc. Opt.=0.21 mi. Incl. Access Roads, Etc.)	$120,000 Plans $50.00	$2,031,000
Rockland	PIP 50-2	Palisades Interstate Park- 3.16 way, Pt. 1 (Willow Grove-Tuers)		Grading, Structures & Misc. Paving Conc. Elliptical Arch 40' Conc. Rig. Frame Arch 2 Span 62.81' Ea. Conc. Rig. Frame Arch 74.01' Conc. Barrel Arch 35.58' Conc. Rig. Frame Arch 28.33' Conc. Closed Box 2 Span 11.55' Ea. Conc. Rig. Frame Arch 31.33' Conc. Barrel Arch 25.37'	$140,000 Plans $50.00	$2,472,000
		DISTRICT No. 9				
		F. W. Donovan, District Engineer, 71 Frederick Street, Binghamton, N. Y.				
Sullivan	FARC50-10	Liberty-County Line, Pt. 1, 2 88 S. H. 5223 Proj. F150-13)		9" Con. Conc. Pvmt. 24' 8" Wide = 2.36 mi Asph. Conc. Opt. = 0.36 mi. 36' Span I-Beam 63.6" Span Alpha I-Beam 85.2" Span Alpha I-Beam 68.6" Span Alpha I-Beam (Alpha = $454.70)	$65,000 Plans $50.00	$1,205,000
		DISTRICT No. 10				
		J. J. Dorey, District Engineer, Montauk Highway at Little E. Neck Road, Babylon, L. I., N. Y.				
Nassau	FARC50-7	North Hempstead Turnpike, 0.42 Br. I.S. H. 5018 Proj. 9541-6)		Painting Deck Plate Girder Bridge & Appurtenances	$1,000 Plans $10.00	$31,000

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders". When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

H. D. TALLAMY Supt. of Public Works

(Continued on page 88)

OFFICIAL PROPOSALS
(Continued from page 87)

Bids: May 1, 1950 (666)

Highway in Bolivia

PROPOSALS FOR THE COMPLETION OF THE COCHABAMBA-SANTA CRUZ HIGHWAY, BOLIVIA

Sealed proposals for the completion of the Cochabamba-Santa Cruz Highway will be received by the Minister of Economy at La Paz, Bolivia, and by the Bolivian Embassy, Continental Building, Washington, D. C. until 6:00 P.M., May 1, 1950.

Information for Bidders may be obtained and Plans and Specifications may be examined at the Bolivian Embassy, Continental Building, 15th and K Streets, Washington, D. C., or at the office of Knappen Tippetts Abbett Engineering Co., 62 West 47th Street, New York, N. Y. Consulting Engineers. The contract will be awarded on the basis of cost plus a fee with a bonus and penalty provision.

The work consists of the following principal items of construction:

1. Reconditioning existing road-building equipment.
2. Purchasing additional equipment.
3. Construction of approximately 290 kilometers of highway and related works.
4. Completion of approximately 104 kilometers of paving and all incompleted culverts and bridges.

KNAPPEN TIPPETTS ABBETT ENGINEERING CO.
62 WEST 47TH STREET,
NEW YORK 19, N. Y.

BOLIVIAN EMBASSY,
CONTINENTAL BUILDING,
15th AND K STREETS,
WASHINGTON, D. C.

CORPORATION BOLIVIANA DE FOMENTO,
OFICINA CENTRAL,
EDIFICIO LA URBANA, 4° PISO,
AVENIDA CAMACHO,
LA PAZ, BOLIVIA.

Bids: April 18, 1950 (663)

Heating Systems

PENNSYLVANIA TURNPIKE COMMISSION
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 A.M. (Eastern Standard Time), the 18th day of April 1950, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and publicly opened and read aloud, for the following contract and/or contracts:

For the construction of Heating Systems for the following nine (9) Utility Buildings and Toll Plazas on the Pennsylvania Turnpike as follows:

Contract C. No.	Name	Connecting Route	County
30-B	Carlisle	U. S. 11	Cumberland
231-B	Harrisburg West Shore	U. S. 111	York
232-B	Harrisburg East	U. S. 230	Dauphin
2233-B	Lebanon-Lancaster	T. R. 72	Lancaster
234-B	Reading	U. S. 222	Lancaster
235-B	Morgantown	U. S. 122	Berks
236-B	Downingtown	Rt. 100	Chester
237-B	Valley Forge	(Several	Chester
330-B	Pittsburgh	U. S. 22	Allegheny

The work to be performed under the contract is generally in the Utility Building and Toll Plaza above mentioned and enumerated. The work does not include the Electrical Systems, the plumbing systems, nor building construction except as noted in the Specifications or as shown on the Contract Drawings.

Copies of plans and specifications and other contract documents, including Reference Drawings, are on file and open to public inspection at the Offices of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, on or about the 4th of April 1950. Copies of Reference Drawings may be purchased from the Pennsylvania Turnpike Commission for the sum of Five ($5.00) Dollars per set.

Plans and specifications may be obtained from the Commission upon deposit of Ten ($10.00) Dollars for each set, such deposits to be refunded in full to any actual bidder upon return of said documents in good condition within five (5) days after the date of the opening of the bids. Refund will be made for all plans and specifications returned, if the project is withdrawn from letting by the Pennsylvania Turnpike Commission. Remittances are payable to the Pennsylvania Turnpike Commission and must accompany requests for contract drawings and specifications.

The Pennsylvania Turnpike Commission reserves the right to award each contract as a separate contract or in any combination of contracts.

The character and amount of bid security to be furnished by the bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
March 24, 1950

Bids: April 20, 1950 (664)

Storm Drainage Work

ADVERTISEMENT FOR BIDS

Sealed bids will be received by the City Council of Alexandria, Louisiana until 10:00 A. M., April 20, 1950, at the office of the undersigned for furnishing all materials and labor for the construction of Storm Drainage Work, Contract Designation Project No. 2, for the City of Alexandria, Louisiana.

Plans, specifications, and proposal forms may be obtained at the office of Pan American Engineers, 1418 Third Street, Alexandria, Louisiana upon a deposit of $20.00; said deposit to be refunded if the documents are returned in good condition within ten (10) days from the date of the receipt of bids. Plans may be examined at the above address or at the office of the City Engineer, City Hall, Alexandria, Louisiana.

Each proposal must be accompanied by a satisfactory bid bond, or by a certified check on a member bank of the Federal Deposit Insurance Corporation, payable to the order of the City of Alexandria, Louisiana in an amount equal to five percent (5%) of the total amount of the bid. The performance bond required is one hundred percent (100%) of the total amount of the contract.

The bids submitted will be publicly opened and read at the hour and date specified above in the office of the Mayor at the City Hall.

No proposal may be withdrawn within thirty (30) days after the above scheduled time of opening and the right is reserved to reject any or all bids and to waive any informalities.

HAL T. DULANY
Secretary-Treasurer

U. S. Government

BIDS FOR ERECTION OF DRAGLINE GRADER MACHINES — Memphis District, Corps of Engineers, U. S. Army, P. O. Box 97, Memphis 1, Tenn. Sealed bids will be received here until 2:00 p.m., C.S.T., April 13, 1950, and then publicly opened, for the erection of two dragline grader machines on two steel barges. Information on request. (648)

(Continued on page 97)

EMPLOYMENT

REPLIES: Box No. Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

CIVIL SERVICE

WANTED: ARCHITECT with building construction experience or an architectural engineer to advise in preparation of plans for new drawings, supervise construction, etc., under Hill Burton Act. State experience, age and salary required. Address: The Commissioner, Tennessee Department of Public Health, 426 Sixth Avenue North, Nashville, Tenn.

SANITARY AND Water Pollution Control Engineers. Technical or administrative positions available. 2 to 5 years experience sanitary and public health engineering in treatment and disposal of sewage and industrial wastes plus college degree in sanitary, public health, chemical or civil engineering. Must be eligible for California State License. Many positions in California State Government at beginning annual salaries $4,092 to $5,256. Official application must be filed by May 29. Write at once to Dept. B, Recruitment Section, State Personnel Board, 1015 L Street, Sacramento 14, California.

SANITARY ENGINEER Positions. Limited number of sanitary engineers will be accepted for positions in Japan. Positions involve guidance and surveillance of Japanese officials in all fields of sanitary engineering. Salary $6,440 per year. Free housing provided for personal and family with transportation paid in and from point of hire. Employee must sign two-year contract. For details and application form, write Chief, Public Health and Welfare Section, General Headquarters, Supreme Commander for the Allied Powers, APO 500, c/o Postmaster, San Francisco, California.

POSITIONS VACANT

WANTED: EXPERIENCED Structural Designers capable of taking responsible charge of work. Seelye, Stevenson & Value, 101 Park Avenue, New York, N. Y.

CONSTRUCTION SUPERINTENDENT — Experienced man wanted for building construction work. Firm located in New England. In reply give experience, references, education and salary expected. P-8126, Engineering News Record.

WANTED CIVIL engineer experienced in taking off quantities from contemplated and supervising projects by general contractor in Minnesota. State age, experience, references, salary and when available. Write P-8127, Engineering News-Record.

STRUCTURAL STEEL Designer and Estimator wanted by leading central west fabricator. Permanent position and good opportunity with large well established and growing company. Please state qualifications, past experience and salary requirements. P-8104, Engineering News-Record.

WANTED: ESTIMATOR by General Contracting Firm in Central Pennsylvania. Applicant must be experienced in all types of general building construction. Age between 30 and 40 preferred but not essential. Advise education, experience and salary expected. P-8145, Engineering News-Record.

QUANTITY SURVEYOR-Estimator. Building Construction New York Area. Minimum experience 2 years. State qualifications and salary. P-8709 Engineering News-Record.

(Continued on the opposite page)

WANTED SUPERINTENDENT

for sewage and waterworks by old and well-established firm, operating principally in Indiana, but planning expansion. Write only for interview. State age, experience, qualifications, reference and salary expected.

P-2544, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

STRUCTURAL STEEL ESTIMATOR

Well known New England fabricating company has an exceptional opening for young experienced structural steel estimator. A real opportunity exists for a man with estimating and sales ability. Give in detail experience, education, etc. References will be required. Replies held strictly confidential.

P-6047, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

WANTED
BRIDGE DESIGNERS,
DESIGNER DRAFTSMEN, RESIDENT
HIGHWAY ENGINEERS, SOILS ENGINEER

Experienced men wanted. State qualifications, age, salary and date available in first letter. Contract period 2½ months. Location, Eastern & Western Pennsylvania.

P-8192, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

ESTIMATOR

Wanted by Philo. firm for large sewers, bridges, etc. Must have had experience with contractors in similar work. State salary, experience and when available.

P-2309, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

POSITIONS VACANT
(Continued from opposite page)

EUROPEAN STEEL Producer wants engineer experienced with sheet piling for selling on commission basis. Submit references. P-6137, Engineering News-Record.

SELLING OPPORTUNITIES OFFERED

PROMINENT MANUFACTURER of centrifugal pumps desires to receive applications from manufacturers Agencies capable of giving aggressive sales representation by an extensive line, well catalogued and complete (does not include boiler feeders). Open territories are: Bangor, Charlotte, Cincinnati, Columbus, Des Moines, Harrisburg, Helena, Jacksonville, Little Rock, Memphis, Milwaukee, Norfolk, Peoria, Reno, Richmond, Scranton, Springfield, Mass., Toledo, Wichita, Wilmington, Del., Youngstown. Reply to EW-2440, Engineering News-Record.

EMPLOYMENT SERVICE

BETTER JOBS—Business—Travel. Engineers, Construction workers. We can help you connect. $3.00 brings advice where-how apply. Personnel Service, Box 785, Sacramento, Calif.

POSITIONS WANTED

CONSTRUCTION ACCOUNTANT, 25 yrs. experience, all phases building construction. College graduate. Will relocate. PW-2424, Engineering News-Record.

MECHANICAL DESIGNER or Plant Engineer—10 yrs. chemical plant layout, process piping, machine design and maintenance, 7 yrs. diversified and supervisory experience. PW-6059, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, 20 yrs. Diversified experience in housing projects, industrial and office bldgs., hospitals, schools, airport and ramp installations, etc., built for cash and domestic. Presently employed in South America desiring change to domestic projects for at least two years. Full references. PW-6029, Engineering News-Record.

PROFESSIONAL ENGINEER desires administrative position in upper echelon of engineering staff or of executive level in technical advisory capacity. Registered to practice in several states for industrial, structural, and mechanical problems. Consulting and industrial firm experience in rubber, chemicals, paper and power; design, construction, estimates and reports. Highest personal and professional standards. Available on arrangement. Employer cognizant of contemplated change. PW-2463, Engineering News-Record.

GENERAL FOREMAN. Shaft, tunnel, quarry, dam, sewer, close, open. General excavation, rock. Speak Spanish. Avail May 1st. PW-6124, Engineering News-Record.

CIVIL ENGINEER with 25 years experience in design, estimating and construction supervision. Considerable experience in earthwork, roads, streets and bridges. Desires change in employment Southwest preferred. PW-6026, Engineering News-Record.

POSITION DESIRED as Carpenter Foreman. 12 years executive experience. Best references. 37 years old. Available after April 1st. PW-6196, Engineering News-Record.

ENGINEER-EXECUTIVE, CE and ME background, good organizer and administrator, 27 years of experience in major development programs, hydro, steam, industrials, bridges. Now in private partnership. Seek broader opportunities and responsibilities in resource or industrial development, either domestic or foreign. PW-6194, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT. Broad experience power and industrial plants. Deep foundation, mass and reinforced concrete. Responsible charge of large operations. PW-6191, Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

WHEN *Answering Advertisements*

PLEASE *do not send original letters, certificates or photographs. We cannot be responsible for their return. Please send photostat or carbon copies.*

WANTED

2 Structural detailer—checkers

Permanent jobs for good men with experience in all types of bridge and building work.

Apply by letter, giving resume of experience, also salary desired.

PAXTON & VIERLING IRON WORKS
P.O. BOX 1085 - OMAHA, NEB.

GRAVEL PLANT SUPERINTENDENT

Wanted for operating and managing portable and permanent plants in Indiana and Michigan. State experience, references and salary.

P-6206, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

POSITIONS WANTED

SUPT. OR Assistant, shaft, tunnel, dam, quarry, sewer, tunnel, mine, shaft-pit, rock specialist. Speaks Spanish. Limited States or overseas. Avail. May 1st. PW-6125, Engineering News-Record.

GENERAL SUPERINTENDENT — 30 — A-1 executive always in top salary bracket. Former employers will say worth it. 25 years responsible charge major buildings and heavy construction. College graduate. Address PW-2402, Engineering News-Record.

BRIDGE CARPENTER—Foreman, young, desires perm. work with small bridge contractor in vicinity of New York, New Jersey, Pennsylvania. PW-6184, Engineering News-Record.

STRUCTURAL DESIGNER-B.C.E. Age 28 Married. Three years in Seabees four yrs. drafting, layout and design of struc. steel and rein. concrete bldgs. and bridges. PW-6160, Engineering News-Record.

CHIEF ESTIMATOR. Thirty years experience all types buildings, reinforced concrete and masonry structures as Estimator, Engineer, Superintendent and Project Manager. Practical field man with engineering education, cost conscious and familiar with present competitive conditions, wants position with a medium size General Contractor. Available immediately. Address Apartment 527, 2501 Que Street, N.W., Washington 7, D. C.

ARCHITECT-EXECUTIVE. More than 15 years experience in top executive positions in building construction and building management. Graduate. Registered. In over $10,000 a year class. PW-6202, Engineering News-Record.

(Continued on page 90)

DO YOU NEED A GOOD MECHANIC-MACHINIST?

If you need a mechanic-machinist Foreman with 10 years' experience in handling all kinds of construction and transportation equipment both in the U.S. and in Venezuela, with a fluent knowledge of Spanish and a desire to work anywhere in Latin America, and with a preference for hard work and responsibility, I'm your man. Salary is subordinate in importance to a definite opportunity for advancement.

PW-2393, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

AVAILABLE
FOR HEAVY CONSTRUCTION

Professional engineer, C. E. graduate, 20 years experience in difficult foundations, underpinning, piling, cofferdams and heavy construction. Capable of structural design, complete estimates, contract negotiations, organizing and supervision of field work. Excellent references.

PW-6210, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

WANTED
CONSTRUCTION SUPERINTENDENT

Large heavy construction firm doing business along Middle and South Atlantic Seaboard is interested in securing the services of a top flight superintendent, thoroughly skilled in waterfront construction and in handling of all types of floating equipment. Work includes cofferdams, pile driving, timber work, concrete construction and steel erection. Steady employment on good sized projects. Fine opportunity for the right man to make a permanent connection with a good salary. Reply

P-2361, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

REQUIRED TWO QUALIFIED ENGINEERS FOR CONSULTING ENGINEER FIRM IN VENEZUELA, SOUTH AMERICA

SALARIES $12,000 PER YEAR plus percentage and share in profit as per Venezuela Law. All travelling expenses paid to and from Venezuela and all business expenses paid when outside of Caracas. One year contract with extension if work satisfactory. One hydraulic engineer experienced in design of irrigation works, outlet structures and diversion works for earth dams, flood routing, etc.

One foundation and soil mechanics engineer experienced in the design of earth dams, levees, foundations for structures, cut offs for dams, etc.

Engineers must be capable of giving directions and training men in their departments. When applying state age, health, experience and references with last five years of experience in detail.

If your application is favorable a conference will be arranged with a representative of this company.

P-6197, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

SUPERINTENDENT WANTED
HEAVY CONSTRUCTION

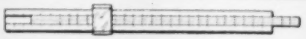
By large contractor operating throughout the Middle West for Permanent position. Must have at least ten years' continuous experience with leading contractors in heavy excavation, heavy concrete, cofferdam and similar work and furnish unquestionable references along these lines. Starting Salary $150.00 per week. In replying state age, education, short outline of experience (including name and duration of employment with last three employers who will not be contacted without your consent.)

P-6035, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ESTIMATOR Wanted

Experienced in heavy Grading, Paving, Sewers and Bridges. Splendid opportunity with growing concern. Location Long Island, New York. State age, experience, salary, and full particulars.

P 6041, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.



A Course of Instruction by Mail in STRUCTURAL ENGINEERING

FOR FORTY YEARS our courses have helped thousands to better positions and to pass State Board Examinations.

Information sent without obligation. Write today.

WILSON ENGINEERING CORP.
College House Offices - Dept. E
Harvard Sq., Cambridge, Mass.

PART TIME WORK WANTED

(Continued from page 89)

REGISTERED ENGINEER desires part-time work New York metropolitan area. Experienced on design, specifications, estimates, structural concrete, heating and air conditioning. PTWW-6082, Engineering News-Record.

LAYOUT DESIGN. Estimates. Specs—Plants, material handling, buildings, industrial structures. Timber, steel, concrete, licensed P.E. PTWW-6101, Engineering News-Record.

FREE LANCE Engineer, metropolitan area. Steel and reinforced concrete design on buildings, structures and foundations. Shop drawings prepared for contractors and builders. PTWW-6120, Engineering News-Record.

TECHNICAL WRITER-Editor. Civil engineering background, national magazine experience, desires part-time assignments editing house organs, preparing trade-paper advertising and promotional programs, preparing operating handbooks, training texts. Can prepare and handle all details. PTWW-6170, Engineering News-Record.

SELLING OPPORTUNITIES WANTED

OWNER'S REPRESENTATIVE. Guarantee that contractor completely comply with owner's requirements. Over 15 years experience, including Construction Superintendent with reputable contractors and major industries. RA-2374, Engineering News-Record.

DESIRE CONSTRUCTION equipment sales position with eventual sales management in mind. Have plenty experience in the equipment business and as a contractor's supervisor and am still young. Reply SA-6114, Engineering News-Record.

Notice of Sale of City Property

Notice is hereby given that the City of Alexandria will offer for sale at public auction at 2:00 P. M., April 20, 1950 at the Administration Building of the Municipal Airport for cash to the highest bidder a certain railroad spur track running from the Alexandria Municipal Airport to the property of the Texas and Pacific Railway Company a distance of 6.08 miles and made up of 1,920 lineal feet of 5 inch rail at 26.87 pounds per lineal foot and 31,100 lineal feet of 4 3/4 inch and 3 3/8 inch rail at 16.82 pounds per lineal foot or a total of 541,640.40 pounds.

The City reserves the right to reject the highest bid if same is not considered to be the fair value of the property and after said bids are made said property may be withdrawn from sale for said reason.

HAL T. DELANY
Secretary-Treasurer, Alexandria, La.

RENT WITH PURCHASE OPTION
PAVING EQUIPMENT
EXCAVATING EQUIPMENT
Forms, Bins, Finishers, Spreaders, Pavers, etc., etc. Tournapulls - Scrapers - Tournadozers, etc.
DRAVO-DOYLE COMPANY
PITTSBURGH, PA.

FOR SALE
ASPHALT PLANT
Cummer Portable Two Fire Dryer
P. O. Box 3273, Chouteau Station
St. Louis 10, Mo.

FOR SALE
New and Guaranteed Used STEEL TANKS, Welded—Bolted—Riveted. For high pressure and ordinary storage: up to 74,000 barrel capacity.
200 open and closed White Oak and Cypress WOOD TANKS, approx. 10' dia., from 8' to 18' high, complete with round hoops and lugs.
Approx. 300 ton of steel SHEETS 3/16"—1/4" and 5/16".
New and Guaranteed Used Steel PIPE and TUBING up to 36" in diameter. Large stocks carried everywhere for IMMEDIATE SHIPMENT.
Your inquiry will be appreciated.
A. GREENSPON PIPE CO., INC.
3615 Olive St. (In Business 23 Years) St. Louis 8, Mo.
LUcas 5651

FOR SALE
Koehring model 605 Dragline equipped with Caterpillar D13000 Engine. 50 ft. boom plus one each 5 ft. and 10 ft. center sections. Rud-O-Matic tagline, type A Counterweight. 30 inch shoes. Kohler 1500 W. Light plant. Hendrix 1 3/4 cu. yd. dragline bucket and New Blaw Knox 720S Clamshell Bucket. Has been used only approximately 2000 hours. Entire machine in A-1 condition.
GIBBS COOK EQUIPMENT CO.
1314 Walnut, Des Moines, Iowa

FOR SALE OR RENT
NORTHWEST mdl. 6 Diesel 1 1/2 cy Shovel
LORAIN 40A—3/4 cy shovel, backhoe, crane
BUCYRUS-ERIE 15B 1/2 cy shovel, backhoe, crane
INSLEY 7 ton Truck Crane
CATERPILLAR D-7 hydraulic bulldozer
INT'L TD-18—TD-14—TD-9—TD-6 bulldozers
New Parts for TD-14—HD-7—Lorain 79
BENDIX MACHINERY CO., INC.
401 Broadway, New York 13 — TEL: Canal 6-5693

FOR SALE
BUCKETS
Distributors for Pettibone Mulliken Corp.
1—Lorain 10A Truck Crane 10 wheel
1—Browning Truck Crane 15" magnet
1—Haiss Creeper Loader Model 27C
1—Haiss Creeper Loader Model 27
VAN HOUTEN MACHINERY CO.
908 Van Houten Ave. Clifton, N. J.

FOR SALE
1—1 1/2 Cu. Yd. Amsco Shovel bucket, new, complete with teeth and sheave for P & H Shovel. Price $1450.00
Phone Williams 1-8600
Hillsgrove, Rhode Island

FOR SALE
CMC 56S Building Mixer Complete. Used less than 6 months.
Asking $5,000
METALWELD, INC.
2621 Hunting Park Ave., Philadelphia, Pa.

GRADERS
Adams 511, Caterpillar, Austin-Western 99M
Truck Cranes, Tractors
UNITED MOTOR EQUIPMENT
914 Spring St. U. S. #1 Elizabeth, N. J.

FOR SALE
Koehring Model 803, 2 cu. yd., combination CRANE, DRAGLINE and CLAMSHELL.
GANTRY mounting also available.
Reply
FS-2160, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

FOR SALE
5 LORAIN MC4 MOTOCRANES, 50' Booms. $11,500 and up. Perf. condition. Sell or rent.
1 Caterpillar D2 Bulldozer 1946. Wide gauge $2600.00
1 10 Ton 3 wheel Galion Gas roller. Like new 2250.00
1 3/4 yd. Owen heavy duty clamshell bucket perfect condition 650.00
2 1/2 yd. Haiss clamshell buckets rebuilt, each 600.00
1 International Stevedore crane, 5 ton 850.00
500 10" bronze bushed sheaves for 5/8" wire rope, each 1.00
STONEWALL CONTRACTING CO.
732 East 141 St. Bronx 54, N. Y.
Melrose 5-3993

FOR SALE
1—G. & H. 6000 gal. per minute pump, 18" discharge, 14' lift, less than year old, powered by General Motors 371 full diesel power unit $2200.00
1—Caterpillar Model 22 Tractor $750.00
1—Insley K-12 Crane w/ wide tracks, Buda gas power, 2 yrs. old $6000.00
1—1/2 yd. Hendrix drag bucket $250.00
1—Kochring 304, 1st't diesel engine, 55 ft. boom, clam & drag, long & wide tracks, 3 yrs. old $10,000.00
1—Hendrix 1 cu. yd. drag bucket $250.00
1—Caterpillar D-6 Angledozer w/Hyster Towing winch, 1 yr. old $9000.00
LATHAM CONSTRUCTION CO.
1446 N. Grant Ave. Columbus, Ohio
Phone—Kingswood 7829

FOR SALE
BUCKEYE TRENCHER
1948 MODEL 406
8 Ft. Digging Depth, A-1 Condition
UNITED CONTRACTING CO.
117 North Twelfth Street Allentown, Pa.
PHONE 3-4743

FOR SALE
#5 North West Crane
Just Completely Overhauled. Apply
EDWARD ACKER CORPORATION
128 East Broadway Port Jefferson, N. Y.

WANTED

WANTED
34 E Dual Drum Paver
Northern Construction Co.
Grand Forks, North Dakota

WANTED
3 1/2 or 3 3/4 cu. yd. Model H. S., Hendrix, Dragline Bucket. State location, price, condition.
RIDGE COAL CO.
Box 237 Sugarcreek, Ohio

WANTED
Diesel Engine - Caterpillar D13000 or equivalent - Clutch or Radiator not essential.
MAYER POLLOCK
Pottstown, Pa.

USED EQUIPMENT

AVAILABLE FOR QUICK DELIVERY

BUCYRUS-ERIE, Model 22B, ¾ yard, transit crane, mounted on STERLING 10 wheel carrier, 30' boom, crane and clamshell equipment, but no bucket. BUDA gas engine on crane. WAUKESHA engine on carrier. Mfg. in 1949. In excellent condition.

LORAIN, Model 40 CRANE, 30' boom, powered by 6 cyl. WAUKESHA model ML gas engine. Mounted on 10 wheel MACK TRUCK. Made in 1937. In good condition.

LORAIN, Model L-40 CRANE, 50' boom, lifting crane attachment, less hook. Gasoline engine. Mounted on A.C. MACK 6x6 Tandem drive. Mfg. in 1941. In good condition.

LORAIN, Model TL-20 CRAWLER, powered by WAUKESHA gas engine, 30' boom, clamshell equipment and lifting crane equipment. Made in 1948. In excellent condition.

P & H Model 600, 1¼ yard CRAWLER Shovel powered by gas engine. Mfg. in 1932. In operating condition.

INGERSOLL-RAND, Model 500, 2 stage Air compressor. WAUKESHA gas engine, clutch, electric starter, 4 solid rubber tires. New in 1939, good condition.

INGERSOLL-RAND, Model 500, 2 stage Air compressor, WAUKESHA gas engine, clutch, electric starter, 4 pneumatic tires. Also Diesel conversion assembly. New in 1939. Reconditioned.

ALLIS-CHALMERS, Model HD-7 TRACTOR, 63" tread, canopy, starter, Gar Wood hydraulic bulldozer. Mfg. in 1947. In good condition.

ALLIS-CHALMERS, Model HD-5 Tractor-Shovel, Hydraulically operated bucket, starter, cab, 13" shoes. In good condition.

BUCYRUS-ERIE, Model TD-9 DOZER SHOVEL, Backfiller blade, skeleton cab. New in 1947. In fair condition.

INTERNATIONAL-HARVESTER, Model TD-14, 74" tread, standard operating attachments, B-E hydraulic bulldozer. New Track shoes. Mfg. in 1945. In very good condition.

INTERNATIONAL-HARVESTER, Model TD-18, 74" tread, with electric starter and lights, standard equipment and Isaacson hydraulic bulldozer. New in 1947. In good condition.

PUMPCRETE DOUBLE, Model 180, powered by WAUKESHA, 6 cyl. engine with remixer powered by Le Roi gas engine. Few fittings, no pipe. On skids. Made in 1939. In good condition.

HOUGH, Model HLD Payloader, Hydraulic bucket control and backfiller blade. New in 1948. In excellent condition.

TROJAN PATROL GRADER with cab blade, scarifier, bulldozer and leaning front wheels. New in 1948. In excellent condition.

EXPORT SERVICE — SUBJECT TO PRIOR SALE — IMMEDIATE DELIVERY

Distributors of: Thew-Lorain Cranes & Shovels—International Harvester Tractors—Chain Belt "Rex" Equipment—Barber-Greene Bituminous & Material Handling equipment—Adams Graders—Hough Pay-loaders and others.

EHRBAR

SINCE 1901

UNION, N. J. Unionville 2-7400 | BROOKLYN, N. Y. Evergreen 3-5000 | WESTBURY, L. I. Westbury 7-1990

PILING

We do a Nation-Wide business in

STEEL SHEET PILING

New & Used — Rented & Sold

100 pcs. 50 ft. Beth. AP3 Buffalo
120 pcs. 50 ft. Carn. M116-Chicago
122 pcs. 40 ft. Inland R27-Illinois
91 pcs. 35-25 ft. Beth. SP2-South Car.
1050 pcs. 30-25 ft. Carn. M112-Minn.
128 pcs. 22-30 ft. Beth. DP2-Mass.

Other lengths & sections at various locations

All sizes Vulcan & McKiernan Pile Hammers & Extractors for Rent and Sale—Ship Rebuilt

Regardless of location at your job, wire or write

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., St. Louis, Mo.
"WE BUY STEEL PILING FOR CASH"

FOR SALE OR RENT

STEEL SHEET PILING

100 PCS. BETH. DP3—60 Ft. with cut.
500 PCS. BETH. DP2—70—60—30—20 Ft.
540 PCS. ZP32, M232—M238—20-60 Ft.
500 PCS. BETH. DP1—27—30 & 45 Ft.
2000 PCS. BETH. SP4—40-60
5 VULCAN No. 1 & 2 HAMMERS
#2 M-K-T & 600A VULCAN EXTRACTORS
STANHOPE, 60 E. 42nd St., N. Y., N. Y.

INTERLOCKING STEEL SHEET PILING

All lengths & strengths — RENT or BUY

LB FOSTER CO

Pittsburgh 30 · New York 7 · Chicago 4 · Houston 2

FOR SALE • REAL BARGAINS

PRICED AT TRADE-IN COST ONLY

USED AND/OR SURPLUS EQUIPMENT LIST #100

All Items subject to prior sale

CRANES, DRAGLINES, SHOVELS, BACKHOES

AIR COMPRESSORS

PAVERS AND MIXERS

TRENCHERS

GREASING UNITS

TRACTORS

HOISTS

POWER SWEEPER

BUCKETS

ATTACHMENTS

W. H. ANDERSON COMPANY

47 W. SEVEN MILE RD. — Forest 6-1000 — DETROIT 3, MICH.

FOR RENT

20-10 TON TO 25 TON CAPACITY

TRUCK CRANES

SECTIONAL BOOM LENGTHS TO 130 FEET

LIMA & P & H CRAWLER CRANES

30 TON TO 50 TON CAPACITY

SECTIONAL BOOM LENGTHS TO 175 FEET

THE ROGER SHERMAN TRANSFER CO.
EAST HARTFORD, CONN.

Branches: SPRINGFIELD, MASS. NEW HAVEN, CONN. ALBANY, N. Y.

• STRUCTURAL STEEL SHAPES •

New and Used—Immediate Delivery

At present our inventory of steel shapes and forms includes a full line of both new and used steel especially for heavy construction work. 4" I beam to 36" Girder Beam.

BEARING PILE SECTION

Stock list on request. Write, wire or phone.

HY DRACHMAN STEEL CORPORATION

Warehouse
14-23 34th Ave., Astoria L. I., N. Y.
Astoria 8-8023; 8-4484-5

Sales Office
563 E. Tremont Ave., New York City, N. Y.
Cypress 9-5440-1

$1.50 Each
P. Post 75¢ within 300 miles of Phila.

U. S. ARMY **5 GAL. JEEP CANS**

COMP. WITH NEW 15" DETACHABLE FLEXIBLE SPOUT

A rugged can for fuel and oil storage for field equipment. Can is used but in good condition. Spout is new with breather vent and breather tube.

12 Cans	$ 15.00
48 Cans	$ 54.00
100 Cans	$100.00

F.O.B. Phila.

Rated Firms Open Account—Others Send Check

J. JACOB SHANNON & CO.
214 N. 22nd St., Phila. 3, Pa.
The Oldest Equipment House in Philadelphia

We offer **OUTSTANDING VALUES** in used and rebuilt heavy contracting and excavating equipment.

Over $1,000,000 stock to choose from.
Compressors—Cranes—Dirt Movers—Graders
Rollers—Shovels—Tractors, etc.

Write, wire or phone for our latest stock list.

CONTRACTORS EQUIPMENT SALES
36 W. Van Buren St. Phone WEbster 3-3022
Chicago 4, Illinois

LORAIN MODEL 80

1—3/4 cy Shovel and 80' Dragline Crane D13000 Caterpillar Diesel engine rebuilt—A1 condition

for sale or rent (with option) prompt delivery

BENDIX MACHINERY CO., INC.
401 Broadway, New York 13 — Tel: Canal 6-5893

DREDGES

H. P. GUION
303 West 42nd St. New York 18, N. Y.
Phone: Circle 6-0919

FOR SALE

120 ton Asphalt Plant
100 ton self propelled derrick scow
30 ton electric gantry cranes
Diesel Locomotive Cranes, 30 ton cap.

STONE THE CRANE MAN
306 Architects Bldg. Detroit 1, Mich.

AIR COMPRESSORS

2—245 CFM Chicago Pneumatic, Type N SE Synch motor driven compressors, single stage 10 x 10, 277 RPM, 200 lb. pr. Complete with all accessories.

DALTON SUPPLY CO.
2429 Cedar St. Philadelphia, Pa.

1—Ingersoll-Rand (new) JB-D-60 Jackbit Grinder
1—Rebuilt Model 42 Bay City Shovel
1—Used Lima Paymaster Shovel

THE HENRY H. MEYER CO., INC.
110 South Howard Street
BALTIMORE 3, MD.

FOR SALE
Caterpillar W10 Bottom Dump Wagons 14 yd.—New & Rebuilt.
LaPlant Choate CW10 Hyd. Scrapers 11.5 yd.—A1 condition.
BARGAIN PRICES
JOHN FABICK TRACTOR COMPANY
Phone: Laclede 8900 St. Louis, 18, Mo. L. D. 5

RAILS-TIES

TRACK ACCESSORIES

Need RAILS?

You'll get them "Faster From Foster"

Largest stocks in U.S.
NEW & RELAYING RAILS
Track Tools and Accessories

Foster guarantees material satisfactory or returnable freight both ways, our expense.

✔PIPE ✔ PILING ✔ WIRE ROPE & SLINGS

L. B. FOSTER CO.
Pittsburgh 30, Pa. New York 7, N.Y.
Chicago 4, Ill. Houston 2, Tex.

BARGAINS

1—36 cu. ft. Stationary Compressor, no power
1—160 cu. ft. Ingersoll-Rand Compressor, truck mounted
1—160 cu. ft. Gardner-Denver Compressor, 4 steel wheels
1—Model 12 Allis-Chalmers Grader
1—Barber-Greene 82A Bucket Loader, on crawlers
1—21E Rex Paver
4—Electric Centrifugal Pumps
3—Triplex Road Pumps
1—¼ yd. Byers Bearcat, Jr. Shovel and Backhoe
1—Model D7 Caterpillar Angledozer
1—Model WSO Allis-Chalmers Tractor and 8 yd. Scoop
1—Model WK Allis Chalmers Angledozer
1—Model BG Cletrac Angledozer
1—8 cu. yd. Euclid Bottom Dump Wagon on crawlers

Allegheny Equipment Corporation
P. O. Box 1868 Pittsburgh 30, Pa.

75A LORAIN CRANE

1¼ c.y. capacity

Thoroughly rebuilt this winter in our own shop. Price $8000. Also have trench hoe and pile leads for this machine.

TULLER CONSTRUCTION COMPANY
Red Bank, N. J.

FOR SALE OR RENT
ALL LATE MODELS

1—Allis Chalmers Tractor
1—Caterpillar Auto Patrol
5—D W 10's—3000 hrs. or less
1—Caterpillar D8 Angledozer
1—Caterpillar D7 Bulldozer

Williams Construction Co.
Box 145 Middle River
Baltimore 20, Md.
Phone—Essex 1310

FOR SALE
ONE JAQUES EARTH BORING MACHINE

Model HM with Turntable mounted on GMC 6'x6' all wheel drive. Truck also equipped with 15,000 lb. Tulsa Winch and Headache Rack as well as special steel body built for this machine. Equipment purchased new September 1948, used 4 months. Excellent condition.

MIDWEST FENCE CONSTRUCTION COMPANY
1252 South Vandeventer Ave.
St. Louis 10, Missouri

PUMPCRETES

Rebuilt Current Models
For Sale or Rent
CONCRETE EQUIPMENT COMPANY
312 E. Wisconsin Ave.
Milwaukee 2, Wis.

FOR QUICK SALE

5—Super-C Turnapulls with L. P. Scrapers, 15 cu. yd.
2—Super-C Turnapulls with 210AW Tournatrailers
1—210AW Tournatrailer unit only

Location — Pennsylvania. Generally good condition. Entire lot offered at very attractive figure.

FS-6016, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

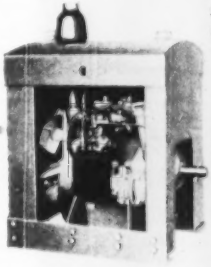
WE MADE A MISTAKE . . . WE BOUGHT TOO MANY
These engines are brand new . . . never used . . .

LE ROI ENGINES

NOT WAR SURPLUS

NOW WE OFFER THEM AT SACRIFICE PRICES . . .

MODEL VP-5 • 2 CYLINDER • 8 HP • 1200 R.P.M.



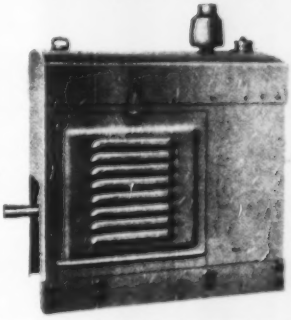
Specifications:
Engine only, 2 cylinder 2⅞" x 3½"
Gasoline Carburetor
Air Maze Oil Bath
Magneto
Fan
Radiator
Metal Housing
Gasoline Tank
Muffler
No. 5 Power Takeoff —Stub Shaft
Weight 385 lbs.

$185.00

IN LOTS OF 10
$195.00 for single units
FOB Chicago

~~24~~ 15 units in stock

MODEL D-91 • 15 HP • 4 CYL. • 1200 R.P.M.



Specifications:
Engine only 4 cylinder 2⅞" x 3½"
Gasoline Carburetor
Air Maze Oil Bath
Magneto
Fan
Radiator
Metal Housing
Gasoline Tank
Muffler
No. 5 Power Takeoff —Stub Shaft
Weight 480 lbs.

$240.00 each

IN LOTS OF 10
$250.00
for single unit
FOB Chicago

~~50~~ 35 units in stock

Seely 3-0303

THOMAS HOIST CO.

20 South Hoyne Avenue Chicago 12, Illinois

DIESEL DRIVEN DERRICK BOAT

72' Steel Box Type Boom—2 cu. yd.—25 ton lifting capacity. Equipped with Ingersoll-Rand Diesel Air Compressor to operate Steam Hammer and Diving Equipment. Has Diesel Generating Set and Auxiliary. Hull built for Government in 1943. Size 105'6" long x 32'3" beam x 10'6" depth. Fairbanks-Morse Diesel Engine recently rebuilt. Complete with Fuel, Water and Air Tanks.

For Sale or Rent

RAE MACHINERY & EQUIPMENT CO., INC.
30 CHURCH STREET NEW YORK 7, N. Y.

SURPLUS USED EQUIPMENT FOR SALE

3—No. 14 Sanderson Cyclone Well Drills.
1—Howe Track Scale 83 ft. long 150 ton capacity.
1—10" Newhouse Crusher.
1—350 K.W. Allis-Chalmers Engine, Type Generator—3 phase 25 cycle, 480 volt, 438 KVA, .80 P.F., 500 RPM.
2—100-HP Allis-Chalmers Slip Ring Motors—Type ARYH, 3 phase 60 cycle, 440 volt, 580 RPM.
2—15-HP Allis-Chalmers Slip Ring Motors, Type ARY, 3 phase 60 cycle, 440 volt, 1730 RPM.
1—2-HP Master Geared Head Motor—Type PA, 3 phase, 60 cycle, 440 volt, 575 RPM
1—175-HP Ideal Induction Type Motor AV, 3 phase, 60 cycle, 440 volt.
1—75-HP Westinghouse Motor—3 phase, 60 cycle, 440 volt.
1—50-HP G.E. Motor—Type MT 336, 3 phase, 60 cycle, 440 volt.
1—50-HP Pan Electric Motor—3 phase, 60 cycle, 440 volt.
1—Allis-Chalmers 4"x4" Electric Pump complete with 10-HP, 3 phase, 60 cycle, 440 volt motor.
1—Gould 1¾"x1" Electric Pump, Fig. 3640, complete with ½-HP, 3 phase, 440 volt motor, 60 cycle.
1—Roper 2¼" Electric Rotary Pump complete with 5-HP, 3 phase, 60 cycle, 440 volt motor.
2—Two-deck 36"x60" Hummer Screens.
1—Ten Ton Plymouth Standard Gauge Locomotive with Ford V-8 Engine.
1—S. A. No. 2000R Speed Reducer.
1—6" Mixim Silencer.
2—Sullivan TM-300 Drift Drills.
1—Sullivan TM-40 Drift Drill.
2—Sullivan, Type MV-6 Drill Wagons.
1—International Power Unit, 6 cylinder UDR 760, Diesel.
1—Complete Cleveland Wagon Drill.
1—D-7 Caterpillar Tractor complete with Cable Controlled Dozer.

COLUMBIA QUARRY COMPANY
1007 Washington Ave. St. Louis 1, Mo.

TOWER AND HOISTING EQUIPMENT FOR SALE

	PRICE
2—O.K. CLUTCH & MACHINERY—E.D. 120 Double Drum Hoists equipped with 120 H.P Hercules Heavy Duty Engine: Line Speed 200' per minute: single line pull 15,000#: Weight 10,500#. Hoist equipped with electric starter	$2,300.00 ea.
1—AMERICAN HOIST—#72-2G Rebuilt—New Motor (In very good condition)	1,450.00
150—lin. ft. ARCHER DOUBLE WELL TOWER: 3 w/b heavy duty with safety devices and ARCHER concrete apparatus including 44 c.f. concrete bucket and 42 ft. tower hopper with Dumping Chute: and one #531 30 ft. Chicago Boom (without cable). All for	3,000.00

ALL THE ABOVE ITEMS WERE PURCHASED IN EARLY 1948 AND WERE USED ON THE V. A. HOSPITAL PROJECT, BUFFALO, NEW YORK

Prices f.o.b. loaded on trucks at our warehouse, Buffalo, N. Y.

FLEISHER ENGINEERING & CONSTRUCTION CO.
936 ELLICOTT SQ. BUFFALO 3, N. Y.

FOR SALE

3—Euclid Dump Trucks
1949 Model 27FD End Dump.
9.7 Cu. Yd. Struck.
Pay Load 30000#.

1—Towermobile with 45' Tower.
1941 Ford V8 Motor.

FRAZER-DAVIS CONSTRUCTION COMPANY
1319 Macklind Ave. St. Louis 10, Mo.

FOR SALE
1—Robinson Air Activated Conveyor Tank
WAMIX, INC.
4839 Bengal Street, Dallas, Texas

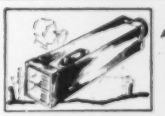
New Guaranteed . . . 60 TON
HYDRAULIC JACKS
Navy Surplus ILLUSTRATED CATALOG **60% off**
BERKELEY DISTRIBUTORS INC.
16 JOHNSON AVE HACKENSACK N. J.

SAFETY HELMETS—Type K & Type B AT A BIG SAVING
500 NEW
1000 Used, Sanitized, with NEW sweatbands
NATIONAL EQUIPMENT SALES, INC.
21-11 Jackson Ave., Long Is. City 1, N. Y.

FOR SALE
One Rebuilt Model 12
BUCKEYE TRENCHING MACHINE
Cutting width up to 20 inches. Maximum digging depth 5'6" $4,500.00
WILLIAM A. CURTIS CORP.
583 Humboldt St. Rochester 10, N. Y.

SURVEYING INSTRUMENTS

U. S. AIR CORPS TYPE
NEW, SAFER, SHOCK RESISTANT
SUN GLASSES
Reduce Eyestrain From Glare & Harmful Rays
Cool green meniscus curved, Reg. $10.00 Quality polished lens of rockalite with gold plated frame, pearled sweat bar and nose pads. Made to meet U. S. Govt. specifications. Complete with case.
$2.25 2 For $4.00
P. Post Paid



MAKE QUICK ACCURATE SIGHTS
•
NEW IMPROVED HAND
SIGHTING LEVEL
COMP. WITH U.S. ARMY PLASTIC POUCH
Precision built, easy to use. Needed when taking elevations, pipe lines, foundations, grading and determining depressions or elevations.
SPECIAL LOW PRICE $1.85
SHIP. CHG. 15c EXTRA EACH

BE SAFE—BE SURE ON LAND OR SEA
Brand New U. S. Navy
POCKET COMPASS
DEPENDABLE - ACCURATE
Has Many Features Not Found in Compasses Many Times This Price.
A fine precision compass designed for hard usage. Has water tight transparent plastic case and luminous dial marked 0 to 360 degrees. Guaranteed.
Regular $10.00 Value
$3.00
P. POST PAID

J. JACOB SHANNON & CO.
214 N. 22nd St. Phila. 3, Pa.
The Oldest Equipment House in Phila.

INSTRUMENT REPAIR BY CRAFTSMEN

Our craftsmen have a completely equipped department fully able to accommodate the repair of all makes of transits, levels and measuring tape. Work includes thorough overhaul, cleaning, oiling and adjustment.

Precision work guaranteed.

DAVID WHITE COMPANY
317 W. Court St., Milwaukee 12, Wis.

INSTRUMENTS FOR RENT
We rent transits and levels on a monthly or yearly basis. Reasonable rates. All instruments are fully guaranteed in first class working order.
DAVID WHITE COMPANY
317 W. Court St. • Milwaukee 12 Wis.

PROFESSIONAL SERVICES

Cards arranged by states, cities, names

Additional cards on following pages

Polk, Powell and Hendon

Engineers — Consultants

Harry H. Hendon
Hugh A. Powell

Water Systems, Sewers and Sewage Treatment Plants, Steam and Hydro Plants, dams, drainage, industrial buildings, municipal planning reports, plans, estimates and construction supervision.

620 Chamber of Commerce Bldg.
Birmingham 3, Ala.

Palmer and Baker, Inc.

Consulting Engineers

For Problems of Transportation
Subaqueous Vehicular Tunnels
Rock Tunnels
Utility Tunnels
Bridges
Grade Separations
Highways
Airports
Traffic Studies
Parking Problems
Waterfront & Harbor Structures

Mobile, Alabama

John S. Cotton

Consulting Engineer

Hydroelectric, dams, supply, irrigation, and multiple purpose projects; flood and erosion control; river basin development planning; dams and their foundations; tunnels; marine structures; valuations; sales.

28 Brookside Dr., San Anselmo, Calif.

Heron Engineering Co.

Chemical, Mining, Industrial and Hydraulic Plants — Irrigation, Water Supply, Power and Sewerage Systems, Large Rockfill Dams, Airports, Oil, Gas and Water Pipe Lines.

2900 S. Acoma, Depart 10, Colorado Chama, New Mexico

Industrial Drilling and Boring Corp.

FOUNDATION BORINGS
GEOLOGICAL SURVEYS

P. O. Box 1205 — 1746 E. Adams St.
Jacksonville, Florida

Patchen & Zimmerman

Engineers

Construction Plant, Cofferdams, Structures, Industrial Plants, Dams, Sewerage and Sewage Treatment, Water Supply and Treatment. Supervision, Surveys, Reports.

Daniel Field Airport,
Augusta, Ga.

E. J. Albrecht Company

Engineers—Contractors

Steel, chemical and power plants, dams, flood control projects, railroads, Bridges, tunnels, heavy excavation.

2626 West 26th Street, Chicago 8

Alvord, Burdick & Howson

Charles B. Burdick
Louis B. Howson — Donald H. Maxwell

Consulting Engineers

Water Works	Sewerage
Water Purification	Sewage Treatment
Flood Relief	Power Generation
Drainage	Appraisals

Room 1401
20 North Wacker Drive, Chicago

Consoer, Townsend & Associates

Water Supply — Sewerage — Flood Control & Drainage — Bridges — Express Highways — Paving — Power Plants, Appraisals — Reports — Traffic Studies — Airports

351 East Ohio St., Chicago 11, Illinois

De Leuw, Cather & Company

CONSULTING ENGINEERS

Transportation, Public Transit and Traffic Problems

Industrial Plants	Grade Separations
Railroads	Expressways
Subways	Tunnels
Power Plants	Municipal Works

150 North Wacker Drive
Chicago 6, Ill.

79 McAllister Street
San Francisco 2, Calif.

Greeley and Hansen

Engineers

Water Supply, Water Purification, Sewerage, Sewage Treatment, Flood Control, Drainage, Refuse Disposal

220 S. State Street, Chicago 4

Harza Engineering Co.

Consulting Engineers

L. F. Harza
R. Mumford Fuchs — Calvin V. Davis
Hydro-Electric Power Projects, Transmission Lines, System Management, Dams, Foundations, Harbor Structures, Soil Mechanics
400 W. Madison St. — Chicago 6, Ill.

Hazelet & Erdal

Consulting Engineers

Fixed and Movable Bridges	Designs, Supervision
Superhighways	Investigations
Industrial Bldgs.	Reports
Airports	Dams, Surveys

Monadnock Block, Chicago 4, Ill.
Dixie Terminal Bldg., Cincinnati 2, O.
Heyburn Bldg., Louisville 2, Ky.

Pioneer Service & Engineering Co.

Consulting and Design Engineers
Specialists — Purchasing
Steam — Hydraulic — Gas
Public Utilities — Industrials
231 So. La Salle St. — Chicago 4

Sargent & Lundy

ENGINEERS

Steam and Electric Plants
Utilities, Industrials
Studies, Reports, Design
Supervision
Chicago

Interstate Engineering

Consulting Engineers

Design and Supervision of Municipal Improvements
Water Works, Sewage, Drainage, Surveys
Foundation Borings
Rock Island, Illinois

Jenkins, Merchant & Nankivil

Consulting Engineers

Water Systems, Power Development, Flood Control, Airports, Traffic Surveys, Municipal Improvements, Sewerage, Industrial Plants, Recreational Facilities, Investigations and Reports.
802 East Miller St., Springfield, Ill.

Boyd E. Phelps, Inc.

Engineers

Water Supply and Purification, Sewage and Industrial Waste Treatment
Power Generation, Airfields, Reports, Investigations, Appraisals
622½ Franklin St., Michigan City, Ind.

Chas. W. Cole & Son

Sewerage, Sewage Treatment, Industrial Wastes, Water Supply, Water Treatment, Airports, Industrial Buildings
Chas. W. Cole, Sr. — Chas. W. Cole, Jr.
Ralph J. Bushee — W. J. McErlain
Walter H. Gardner
216 W. LaSalle, South Bend, Ind.

Stanley Engineering Company, *Consulting Engineers*

Airports — Drainage — Electric Power
Flood Control — Industrial — Rate Studies — Sewerage — Valuations — Water Works
Hershey Building, Muscatine, Ia.

G. Douglas Andrews Associates

Engineering Consultants

General Engineering and Consulting Services
Valuations and Management
212 Washington Avenue
Towson, Baltimore 4
Maryland

Saxe, Williar & Robertson

ENGINEERS • CONSULTANTS

Industrial Buildings
Bridges — Structures — Foundations
Highway & Regional Planning
Harbor Work, • Port Development
Reports • Investigations

130 West Hamilton St.,
Baltimore 1, Maryland

Whitman, Requardt and Associates

Engineers — Consultants

Civil — Sanitary — Structural
Mechanical — Electrical
Reports, Plans, Supervision, Appraisals
1304 St. Paul Street
Baltimore 2, Maryland

Chas. T. Main, Inc.

Engineers

Design and Supervision of Construction for Industrial Plants
Electrical, Steam and Hydraulic Engineering
Investigations, Reports and Appraisals
Chamber of Commerce Bldg.
80 Federal St., Boston, Mass.

Metcalf & Eddy

ENGINEERS

Investigations — Reports — Design
Supervision of Construction and Operation
Management — Valuation — Laboratory
Statler Building, 111 Sutter St.
Boston 16, San Francisco 4

Philip B. Streander and Affiliates

Consulting Sanitary Engineers
Water Supply, Treatment, Distribution
Sewerage, Sewage Treatment
Plans, Supervision, Reports
[illegible] Atlantic Ave., Boston 11, Mass.

Chas. F. Dingman

Engineer
Consultant on Construction Cost
Valuation of Physical Assets
Estimates of Cost of Projected Construction or Expansion
Established 1925
Palmer, Mass.

Black & Veatch

Consulting Engineers

Water · Sewage · Electricity · Industry

Reports, Design, Supervision of Construction, Investigations, Valuation and Rates.

4706 Broadway, Kansas City 2, Mo.

Burns & McDonnell Engineering Company

Consulting Engineers — 50th Year
Water Works, Light and Power, Sewerage, Reports, Designs, Appraisals
Basic Investigations
Box 7585 Country Club P. O.
85th & Troost, Kansas City 2, Mo.

Harrington & Cortelyou

Consulting Engineers

Frank M. Cortelyou
E. M. Newman — F. M. Cortelyou, Jr.
Movable and Fixed Bridges of All Types, Foundations, and Related Structures
1601 Baltimore — Kansas City 6, Mo.

Russell & Axon

Consulting Engineers

Geo. S. Russell — E. E. Wenger
Joe Williamson, Jr.
Water Works, Sewerage, Sewage Disposal, Industrial and Power Plants, Appraisals
105 Olive Street — Municipal Airport
St. Louis 2, Mo. — Daytona Beach, Fla.

Sverdrup & Parcel

Consulting Engineers

Bridges, Structures and Reports, Industrial and Power Plant Engineering
Syndicate Trust Bldg., St. Louis 1, Mo.

William J. Wenzel

Consulting Engineer

Great Falls, Montana
Developing the Great Northwest

Edwards and Kelcey

ENGINEERS

Surveys — Reports — Economic Studies
Design — Supervision — Transportation
Traffic — Parking — Terminals — Highways — Expressways — Grade Separations — Tunnels — Bridges — Water Supply
2 Market Street — Newark 2, N. J.

Benjamin L. Smith & Associates

Engineers

Investigations — Reports
Designs — Supervision — Valuations
Municipal Engineering and Public Utilities
11 North Pearl St. — Albany 7, N. Y.

F. D. Cooper

Consulting Engineer

Foundations
Design
Investigation
124 Lenoxtown Road
DeWitt, New York

E. Lee Heidenreich, Jr.

Consulting Engineer

Quarries	Plant Layout
Crushing Plants	Storage
Milling Plants	Methods
Concrete Products Plants	Design, Appraisals

67 Second St. — Newburgh, New York

Barker & Wheeler

Water Supply	Utility and
Sewerage	Industrial
Sewage Disposal	Valuations
Power Systems	Reports

New York City, 11 Park Place
Albany, N. Y., 16 State St.

Clinton L. Bogert Associates

Consulting Engineers

Water and Sewage Works
Refuse Disposal — Industrial Wastes
Drainage — Flood Control
624 Madison Ave., New York 22, N. Y.

Bowe, Albertson & Associates

Engineers

Water and Sewage Works, Industrial Wastes, Refuse Disposal, Municipal Buildings, Industrial Buildings, Reports, Design, Estimates, Valuations, Laboratory Service.
110 William St., New York 7, N. Y.

Buck, Seifert & Jost

Consulting Engineers

(Formerly Nicholas S. Hill Associates)

Water Supply — Sewage — Hydraulic Developments, Reports and Valuations, Chemical and Biological Laboratories.
New York City, 112 E. 19th St.

When you need a SPECIALIST in a hurry . . .

Engineering News-Record's Professional Service Section offers the quickest most direct method of contacting consultants who may be available NOW.

PROFESSIONAL SERVICES

Cards arranged by states, cities, names

Additional cards on preceding and following pages

L. Coff

Consulting Engineer

Prestressed Concrete
Bridges and Frames
198 Broadway New York 7, N. Y.

Hugh L. Cooper & Co.

Incorporated

General Hydraulic Engineering

Including the design, financing, construction and management of hydro-electric power plants.

350 Fifth Ave., New York 1, N.Y.

Ebasco Services Inc.

ENGINEERS
CONSTRUCTORS
BUSINESS CONSULTANTS

Design and Construction
Financial and Operating Consultation
Investigations and Reports
Consulting Engineering

Two Rector Street New York
209 S. LaSalle Street Chic. 4, Ill.
1604 K Street, N.W. Wash. D. C.

Fay, Spofford & Thorndike

Engineers

Charles M. Spofford Ralph W. Horne
John Ayer William L. Hyland
Elon A. Bowman Frank L. Lincoln
Carroll A. Farwell Howard J. Williams

Bridges and Industrial Plants
Water Supply and Sewerage Works
Port and Terminal Works Airports

Valuations, Investigations, Designs, Supervision of Construction.

11 Beacon St., Boston, Mass.
420 Lexington Ave., N. Y.
(Graybar Bldg.)

Fraser-Brace Engineering Co., Inc.

DESIGN - CONSTRUCTION - REPORTS - APPRAISALS
COMPLETE MANAGEMENT OF PROJECTS

10 East 40th St.,
New York 16, N. Y.

Hardesty & Hanover

Consulting Engineers

Successors to Waddell & Hardesty

Bridges
Long Spans of All Types
Movable - Lift, Bascule and Swing
Hanover Skew Bascule
Steel and Concrete Spans
Grade Crossing Eliminations

Other Structures
Foundations
Supervision, Reports, Appraisals

101 Park Avenue, New York 17, N. Y.

Frederic R. Harris, Inc.

CONSULTING ENGINEERS

Harbors, Piers & Bulkheads, Drydocks
Foundations, Soil Mechanics
Sanitary & Industrial Waste Disposal
Water Supply, Flood Control
Airports, Highways, Bridges
Power, Industrial Plants

27 William Street New York
Fidelity Phila. Trust Bldg. Philadelphia
Ferry Bldg San Francisco

Howard, Needles, Tammen & Bergendoff

Consulting Engineers

Bridges and Structures

New York, N. Y., 55 Liberty St.
Kansas City, Mo., 921 Walnut St.

Knappen Tippetts Abbett Engineering Co.

Ports, Harbors, Flood Control, Power, Dams, Bridges, Tunnels, Highways, Subways, Airports, Traffic, Foundations, Water Supply, Sewerage, Reports, Design, Supervision, Consultation.

62 West 47th Street, New York City

Lockwood, Kessler & Bartlett, Inc.

ENGINEERS — SURVEYORS

General Engineering Services
Aerial and Ground Surveys
Photogrammetric Mapping
Domestic and Foreign

32 Court St. Brooklyn 2, N. Y.

Modjeski and Masters

Consulting Engineers

Design, Supervision, Reports, Inspection and Investigations, of Bridges, Structures, and Foundations.
535 Fifth Ave. State Street Bldg.
New York, N. Y. Harrisburg, Penna.

Moran, Proctor, Freeman & Mueser

Consulting Engineers

Foundations for Buildings, Bridges and Dams; Tunnels, Bulkheads, Marine Structures; Soil Studies and Tests; Reports, design and supervision.

New York 17, N.Y., 420 Lexington Ave.

PARSONS, BRINCKERHOFF, HALL & MACDONALD
Ap. Corffos 614 Caracas, Venezuela.

Parsons, Brinckerhoff, Hall & Macdonald

ENGINEERS

Airports, Bridges, Tunnels, Highways, Traffic and Transportation Reports, Subways, Foundations, Harbor Works, Valuations, Power Developments, Industrial Buildings, Dams, Sewerage, Water Supply.

51 Broadway, New York 6, N. Y.

Malcolm Pirnie Engineers

Civil & Sanitary Engineers

Malcolm Pirnie Ernest W. Whitlock
Richard Hazen G. G. Werner, Jr.

Investigations, Reports, Plans, Supervision of Construction and Operations, Appraisals and Rates

25 W. 43rd St., New York 18, N. Y.

The Pitometer Company

Engineers

Water Waste Surveys
Trunk Main Surveys
Water Distribution Studies
Penstock Gaugings

New York, 50 Church St.

Alexander Potter Associates

Consulting Engineers

Water Works, Sewerage, Industrial Wastes, Hydraulic Works, Reports, Designs, Appraisals.

50 Church St., New York, N. Y.

Clyde Potts

Weston Gavett Stanley N. Williams
Consulting Sanitary Engineers
Sewerage and Sewage Disposal
Water Works and Water Supply
Valuations and Appraisals
30 Church Street, New York 7

Sanderson & Porter

Engineers and Constructors

New York Chicago
San Francisco Los Angeles

Scheidenhelm, F. W.

Consulting Engineer

Hydraulic Engineering; Hydro-electric Development; Water Supply; Flood Control; Engineering Problems relating to Water Rights and Water Power Law; Appraisals. 50 Church Street, New York 7, N. Y.

Seelye, Stevenson & Value

Consulting Engineers

Successors to
Elwyn E. Seelye & Company
101 Park Avenue
New York 17, N. Y.

Airports, Highways, Dams, Concrete Steel, Welding, Foundations, Stadia, Appraisals & Industrial Plants.

Elwyn E. Seelye, Albert L. Stevenson
Burnside R. Value
H. S. Woodward, Austin M. Rice
C. H. Hamilton, V. J. Parella, C. M. Thrson, R. Sahlberg, W. D. Bailey, J. U. Wiesendanger, A. R. Kelly.

Ole Singstad

Consulting Engineer

TUNNELS

Investigations, Reports, Design Specifications, Supervision

15 Whitehall St., New York 4, N. Y.

Frederick Snare Corporation

Engineers — Contractors

Harbor Works, Bridges, Power Plants, Dams, Docks and Terminals.

Difficult and Unusual Foundations A Specialty.

233 Broadway, New York City 7
1400 South Penn Square, Philadelphia

Havana, Cuba Lima, Peru
Bogota, Colombia, Caracas, Venezuela
San Juan, Puerto Rico, Guayaquil, Ecuador

Sy-Co Engineers

G. A. Syversen, G. Randolph Syversen
H. Syversen - Consultants
Industrial Plants, Commercial Buildings, Power Plants,
Materials Handling Systems
Estimates - Reports - Design
Supervision
39 Broadway New York 6, N. Y.

D. B. Steinman

Consulting Engineer

Bridges
Design, Construction,
Strengthening, Investigations,
Reports, Advisory Service.

117 Liberty St., New York 6, N.Y.

Taylor, Henry W.

Water Supply, Sewerage
Garbage Disposal, Incineration
Industrial Wastes Disposal
Hydraulic Developments

11 Park Place, New York City

The J. G. White Engineering Corporation

Design — Construction
Reports — Appraisals

80 Broad Street, New York 4

James M. Caird

Established 1898

C. E. Clifton, H. A. Bennett
Chemists and Bacteriologist
WATER ANALYSIS
Tests of Filter Plants
Cannon Building, Troy, N. Y.

Keis & Holroyd

Consulting Engineers

Formerly Solomon & Keis
Since 1906
Water Supply, Sewage Disposal, Garbage & Refuse Incineration, Industrial Buildings

Troy, N. Y. Ft. Lauderdale, Fla.

The Austin Company

Design and Construction

Manufacturing and Process Plants
Airports & Air Transport Buildings
Railroad Terminals and Facilities
Power Plants—Industrial & Institutional
Industrial Office Buildings and Laboratories

Reports and Plant Location Surveys

New York CLEVELAND Los Angeles
Chicago Houston Oakland
Detroit Seattle

Havens and Emerson

W. L. Havens C. A. Emerson
A. A. Burger F. C. Tolles F. W. Jones
CONSULTING ENGINEERS
Water, Sewage, Garbage, Industrial Wastes, Valuations—Laboratories

Leader Bldg. Woolworth Bldg.
Cleveland 14 New York 7

Burgess & Niple

Civil and Sanitary Engineers

Consultants since 1908

Water supply treatment and distribution
Sewage and industrial wastes disposal
Investigations, reports, appraisals, rates
Plant operation, laboratory, plans and specifications

584 E. Broad St. Columbus 15, Ohio

Jones, Henry & Schoonmaker

(Formerly Jones & Henry)
Consulting Sanitary Engineers
Water Works, Sewerage & Treatment
Waste Disposal
Security Building Toledo 4, Ohio

Toledo Testing Laboratory

Engineers — Chemists

Inspection Tests
Research Development
Concrete - Asphalt - Soils - Ceramics
Foundation Investigation
Borings Diamond Drilling
Load Tests

1810 North 12th St. Toledo 2, Ohio

Glancy, Carle & Marseglia

Engineers

Steel & Concrete Structures
Industrial, Commercial Buildings
Design, Supervision, Reports
1706 Market Street, Youngstown, Ohio

Economy

The service of the Consultant can usually be an economy in coping with your most intricate problems.

PROFESSIONAL SERVICES

Cards arranged by states, cities, names

Additional cards on preceding pages

Benham Engineering Co.
ENGINEERS
Webster L. Benham
M. Am. Soc. C. E.
Water Supply & Purification, Sewerage, Sewage Disposal, Electric Light & Power, Roads, Drainage
Am. National Bldg., Oklahoma City, Okla.

Capitol Engineering Corporation
Engineers — Constructors — Management
Bridges — Dams
Planning — Airports
Sewage Systems — Water Works
Design and Surveys — Roads & Streets
Executive Offices Dillsburg, Penna.
729 N. Front St. — Harrisburg, Pa.

Brookhart & Tyo, Inc.
Engineers
Highways
Industrial Buildings
Bridges and Structures
Design Estimates Reports
729 N. Front St. — Harrisburg, Pa.

Gannett Fleming Corddry & Carpenter, Inc.
ENGINEERS
Water Works, Sewage, Industrial Wastes & Garbage Disposal — Roads, Airports, Bridges & Flood Control, Town Planning, Appraisals, Investigations & Reports.
Scranton Pa. — Pittsburgh, Pa.
Harrisburg, Pa.

Aero Service Corporation
Photogrammetric Engineers
Aerial Topographic Maps
Precise Photo Mosaics
Plastic Relief Models
236 E. Courtland St.
Philadelphia 20, Pa.

Albright & Friel, Inc.
Consulting Engineers
Water, Sewage and Industrial Waste Problems, Airfields, Refuse Incinerators, Power Plants, Industrial Buildings, City Planning, Reports, Valuations, Laboratory.
121 So. Broad St., Philadelphia 7, Pa.

Day & Zimmermann, Inc.
Engineers
Designs, Construction, Valuations Reports and Management
Public Utilities and Industrials
Philadelphia
New York Packard Building Chicago

Fridy - Gauker - Truscott & Fridy
Architects & Engineers
Water — Sewerage — Industrial Waste Incineration — Power & Distribution
Airport — Building — Town Planning
1321 Arch Street — Philadelphia 7, Pa.

William A. Goff, Inc.
General Engineering and Consulting Services
Water, Sewerage, Refuse Incineration, Industrial Buildings, Power Plants, Airports, Town Planning, Plans, Supervision, Valuations, Reports
Broad St. Station Bldg., Phila. 3, Pa.

Hunting, Larsen & Dunnells
Engineers
Industrial Plants—Structures
Bridges—Steel and Reinforced Concrete
Design and Supervision—Reports
1150 Century Bldg., Pittsburgh, Pa.

Morris Knowles, Inc.
Engineers
Water Supply and Purification, Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.
Pittsburgh, Pa.

Gilbert Associates, Inc.
Engineers and Consultants
Design and Supervision of
Steam, Hydro, Water Supply,
Sewage Disposal, Diesel Plants
and Airports, Valuations, Laboratory
Reading, Pa. — 612 Washington St.
New York — 61 Broadway
Houston — Oil & Gas Building
Washington, D. C. — 1417 K St., N. W.

Michael Baker, Jr., Inc.
THE BAKER ENGINEERS
CIVIL ENGINEERS, PLANNERS, AND SURVEYORS
MUNICIPAL ENGINEERS
Airport Design—Sewage Disposal Systems—Water Works Design and Operation—Cons. Sur.—Surveys & Maps.
Rochester, Pa. — Jackson, Miss.

Lacy, Atherton & Davis
Architects and Engineers
Hotel Sterling Building,
Wilkes-Barre, Pa.

Frank A. Busse
Consulting Engineer
Industrial Buildings, Viaducts, Bridges, Foundations, Harbor Works, River Barge Terminals, City Planning, Airports, Sewage Treatment
669 Shrine Building, Memphis 3, Tenn.

Myers & Noyes & Associates
Consulting Engineers
Water Supply, Sewage, Flood Control, Shore Protection, Irrigation and Reclamation, Reports and Valuations
2204 Tower Petroleum Bldg., Dallas, Texas
302 Wilson Building
Corpus Christi, Texas

Lockwood & Andrews
Consulting Engineers
Airports, Paving, Industrial Plants, Drainage & Sewerage, Site Locations, Steel & Foundations, Water Supply, Structures, Harbor Works, Valuations, Reports — Design — Supervision
Union Nat'l Bank Bldg., Houston, Tex.

Hutchings & Milani, Ltd.
Engineers & Constructors
Industrial Roads Power Plants
Dams Tunnels Harbor Works
Foundations
CARIBBEAN — WEST INDIES — and THE AMERICAS
BERMUDA CARIBBEAN CONSULTANTS, LTD.
Architects & Engineers
Design - Reports Investigations
L. C. Milani, ASCE; C. W. Abbot, R.I.B.A.; N. J. Seaver, A.I.A.; F. Coller; T. F. Cox; H. J. Williams; S. H. Pace; W. Weir
BOTH HEAD OFFICES AT HAMILTON, BERMUDA

Inspecting and Testing

Robert W. Hunt Co.
Inspecting and Testing Engineers
Inspection and Tests
of Materials
Supervision of Construction
for
Utility Plants,
Buildings, Bridges,
Machinery and Equipment
General Offices and Laboratories
175 West Jackson Boulevard, Chicago
New York — Pittsburgh — St. Louis

The Gulick-Henderson Laboratories, Inc.
Inspecting & Testing Engineers
324 Fourth Ave., Pittsburgh 19, Pa.
25 West 43rd St., New York 18, N. Y.
431 South Dearborn St., Chicago 5, Ill.

U. S. Government

(Continued from page 87)

Office of the District Engineer, Corps of Engineers, U. S. Army, 1217 U. S. Post Office and Custom House, St. Paul 1, Minnesota.—Sealed bids, in duplicate, for furnishing all labor and materials and performing all work required for Channel Improvement on Red Lake River, Minnesota, Stage No. 4, will be received in this office until 11:00 A.M., C.S.T., 11 April 1950 and then publicly opened. Further information upon application. (650)

OFFICIAL PROPOSALS

Bids: April 1, 1950 (656)

New Mound Park Hospital

St. Petersburg, Florida

Sealed proposals will be received by the City of St. Petersburg, Florida, at the office of the City Manager, in the City Hall, St. Petersburg, Florida, until 11:00 o'clock A.M. (EST), Monday, May 15, 1950, for the furnishing of all labor, equipment and materials for the construction of the New Mound Park Hospital, at which time they will be publicly opened and read aloud. Plans, specifications and contract documents are open to public inspection at the office of the City Engineer, Room 211, City Hall on and after April 1, 1950, or may be obtained from that office upon deposit of Fifty ($50.00) Dollars. The full amount of the deposit for one set of documents will be returned to each actual bidder, and all other depositors will be refunded Twenty-five ($25.00) Dollars upon return of all documents in good condition within thirty (30) days after the date of opening of the bids. All proposals shall be made on forms furnished by the City Manager and shall be sealed and marked: "PROPOSAL FOR CONSTRUCTION OF THE NEW MOUND PARK HOSPITAL."

Bids must be accompanied by a certified check or bid bond in the amount of not less than five (5%) percent of the bid. No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of thirty (30) days. The City of St. Petersburg reserves the right to reject any or all bids and to waive informalities and irregularities.

CITY OF ST. PETERSBURG, FLORIDA
Ross E. Windom
City Manager

OFFICIAL PROPOSALS

Bids: June 30, 1950 (652)

Big Eildon Project

STATE RIVERS AND WATER SUPPLY COMMISSION, VICTORIA, AUSTRALIA

TENDERS are invited from organizations experienced in the construction of large civil engineering works for the construction of the *BIG EILDON DAM* at Eildon in the State of Victoria, Australia.

The construction of the dam will involve the excavation and placing of approximately 1,000,000 cubic yards of rock and rock fill in embankment with a maximum height of about 250 feet, approximately 300,000 cubic yards of concrete work, outlet and control works and appurtenant structures, including a *PONDAGE WEIR* about three miles below the dam.

Contracting organizations are invited to submit *TENDERS* for

(a) A Schedule of Rates Contract;
or
(b) A Cost-Plus Contract based on a "Target Estimate" to be submitted by the tenderer.

EXHIBITION DOCUMENTS comprising *GENERAL CONDITIONS OF CONTRACT, PLANS AND SPECIFICATIONS AND CONDITIONS OF TENDERING* together with engineering and geological reports, and general information concerning prevailing wages, rates and employment conditions are available at £10 10 0 per set and will be forwarded to bona fide prospective tenderers on receipt of written applications, enclosing cheque, addressed to—

The Secretary,
State Rivers and Water Supply Commission,
100-110 Exhibition Street,
MELBOURNE,
VICTORIA, AUSTRALIA.
or
The Agent-General for Victoria,
Melbourne Place,
Strand,
LONDON, ENGLAND.

TENDERS endorsed "Tender for Construction of Big Eildon" will be received by the Secretary, State Rivers and Water Supply Commission at 100 Exhibition Street, Melbourne, until 12 noon on June 30, 1950. A preliminary deposit of £A1,000, payable at Melbourne, must be lodged with the tender and will subsequently be refunded to unsuccessful tenderers.

Lowest or any tender not necessarily accepted.

OFFICIAL PROPOSALS

Bids: April 18, 1950 (654)

Port Jervis Sewerage System

CONTRACTS 380 and 381

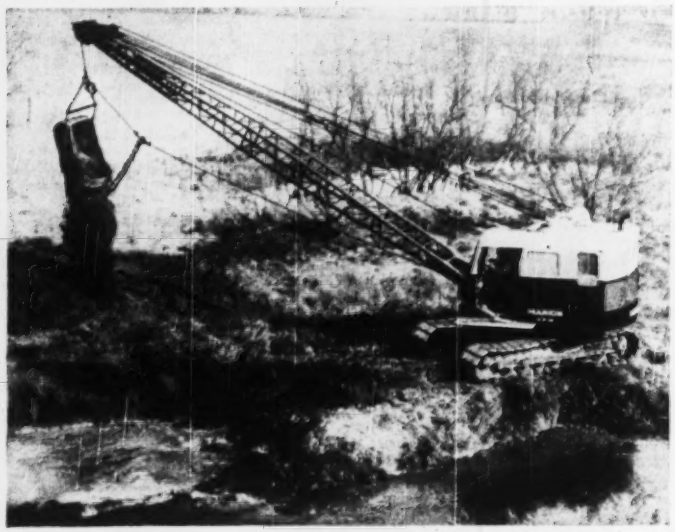
SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A. M., Eastern Standard Time, on Tuesday, April 18, 1950, for Contracts 380 and 381, for the construction of the interceipting sewers, force mains, pumping stations and sewage treatment plant of the Port Jervis sewerage system, in the city of Port Jervis, Orange county, New York, all as set forth in the specifications.

CONTRACT 380 will consist of about 5,25 feet of 10-inch, 12-inch and 15-inch vitrified pipe and about 2,980 feet of 15-inch cast iron pipe for the interceipting sewers, about 1,100 feet of 16-inch and about 915 feet of 8-inch cast iron force mains, two river crossings totaling about 320 feet in length, and appurtenances. CONTRACT 381 will consist of the North Street and Neversink sewage pumping stations and a sewage treatment plant comprising a pumping station for industrial wastes, inside building, Imhoff tanks, high-rate trickling filters, recirculating pump structure, secondary settling tanks, glass-enclosed sludge drying beds, chlorine equipment and contact tank, Venturi meter, fine screens, pumps, piping and other equipment and appurtenances.

Copies of information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., of each contract can be obtained at the office of the Chief Engineer, Room 1311, at the above address, upon application in person or by mail, by depositing the sum of $5.00 in cash or its equivalent for each set. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each set submitted as a bid and a refund of $4.00 will be made for each other set returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, HENRY HESTERBERG, RUFUS E. McGAHEN, Commissioners, Board of Water Supply. RICHARD H. BURKE, Secretary.

NEW PRODUCTS



Crawler-Mounted Air-Controlled Excavator Has One-Yd Capacity

The type 43-M machine can be used as a shovel, dragline, clamshell, crane, back-hoe, or pile driver. Simplicity of design eliminates need for machinery, lagging, or sprocket changes in making front-end conversions. A single boom serves for both shovel and backhoe work, but a goose-neck boom is available if desired for backhoe service. A single boom, with butt-jointed sections is used for dragline, clamshell, crane, or pile driver service. Features include: Easily accessible machinery; independent chain crowd; Marion air-control system; independent boom hoist with overrunning clutch, holding brake, and safety ratchet is standard equipment; crawler rollers are shielded from dirt, and crawlers are self-cleaning and non-clogging; and machinery supports are built integral with upper frame to assure machinery alignment.—Marion Power Shovel Co., Marion, Ohio.

Portable Core Drill

Teredo core drill can be equipped with hydraulic feed or screw-feed drill head, and power can be supplied by any type of power plant. The 3-speed totally enclosed transmission provides proper bit-rotation speed for any rock condition. Full 24-in. drill travel provides more footage per shift. Gate-head is hinged to swing clear of the hole, making it unnecessary to move entire drill out of the way when a string of drill rods is being lowered or hoisted. Drill head can be rotated 360 deg. to drill holes vertically, horizontally, or at an angle. A power take-off is provided for driving an integrally mounted positive-displacement pump.—Acker Drill Co., Inc., Scranton 3, Pa.

Aluminum-Foil Insulation

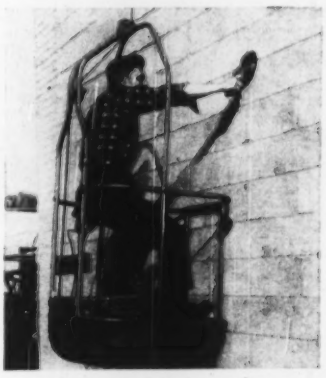
Building insulating blankets consist of aluminum foil combined with a special sheet of vapor-proof paper. Alfol is said to reflect 95 percent of all radiant heat, and to provide both insulation and a vapor barrier in one material. Type I Alfol blanket consists of one layer of aluminum secured along its edges to an asphalt kraft paper, plus a 40-lb kraft line sheet to regulate lateral pull and strain. Type II is similar but contains two layers of aluminum foil. The blankets are fabricated in 15, 19, and 23-in. widths to fit 16, 20, and 24-in. framing centers. Material is supplied in continuous-length rolls of 250 sq ft, which weigh less than 20 lb.—Reflectal Corp., 155 E. 44th St., New York 17, N. Y.

Sinker Rock Drill

Thirty-five-pound-class sinker rock drill features powerful, constant blowing and strong rotation. It can be used for: Horizontal drilling when mounted on the Thor sinker leg and equipped with tungsten-carbide bits; for drilling test holes; for drilling deep anchor bolt holes; when fitted with front and back head lugs for easy sliding on boards in snakehole drilling; and for secondary drilling of large boulders.—Independent Pneumatic Tool Co., 175 State St., Aurora, Ill.

Self-Computing Rod

Movable scale band permits direct readings of elevations without computations. With rod placed on a bench mark or turning point of known elevation, the scale is rotated until the instrument sights the correct elevation on the rod. The scale is then locked in position, and when the rod is moved, the instrument automatically reads the correct elevation of the next point. This eliminates recording of fore and back sights, as well as computing height of instrument. Only two columns of figures are required in the note book—station and elevation. The L-E-Vation rod is available with scales computed in feet and tenths or feet and inches.—Lenker Mfg. Co., 599 Chestnut St., Sunbury, Pa.



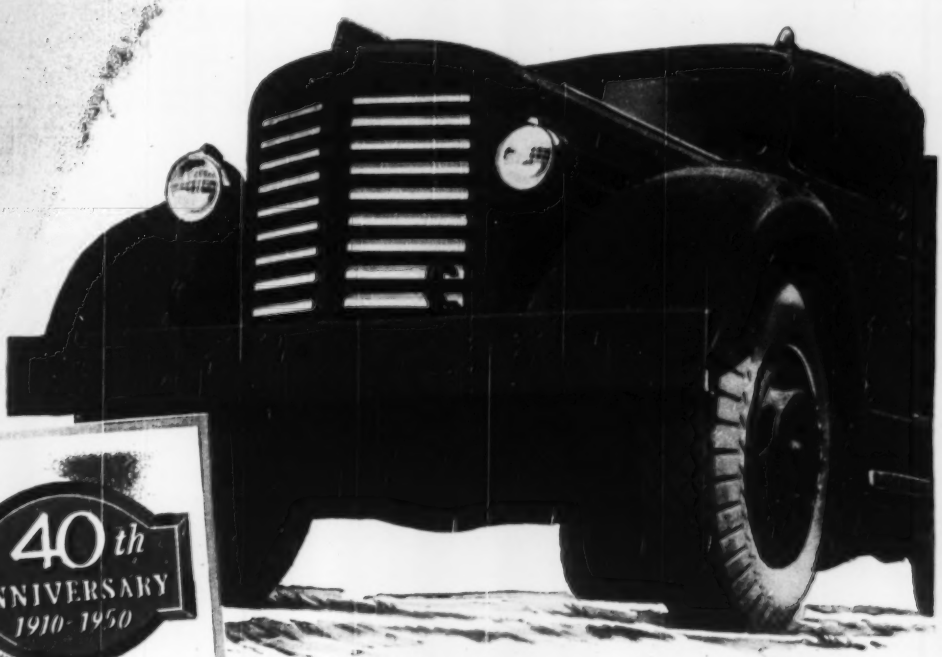
Foot-Powered Platform Hoist

One-man platform hoist is raised or lowered by foot-operated bicycle pedals connected by roller chain to a winch drum. Movement of the hoist in either direction may be as fast as 25 fpm. The Bosun's Chair has a rated capacity of 625 lb, and is fur-

(Continued on page 100)

FEDERAL Trucks

POWERED for Profit-Plus PAYLOADS



40th ANNIVERSARY 1910-1950

"This year marks Federal's 40th Anniversary as an exclusive manufacturer of motor trucks. Every vehicle that rolls off our assembly lines reflects the creative engineering development of these many years. We believe that the thousands of Federals in daily use all over the world offer conclusive proof of a job well done."

G. H. Hammond,
President

FEDERAL'S BALANCED DESIGN MATCHES ANY HAULING JOB

There's a reason for Federal Truck's enviable record of satisfactory performance. It's all-truck construction from front to rear that makes this reputation for economy, low maintenance cost and long service possible. Since 1910 Federal has built motor trucks exclusively. Federal engineers know what you operators need to meet today's hauling demands. So, put Federal Trucks to work for you—you'll see what Federal owners mean when they say, "Toss the Tough Jobs to Federal."

FEDERAL MOTOR TRUCK COMPANY • Detroit 9, Mich., U.S.A.

Federals Have Won . . . By Costing Less to Run

49 MODELS
¾ TO 35 TONS
INCLUDING A COMPLETE LINE OF 6-WHEELERS

TEAR OFF THIS COUPON AND MAIL TODAY!

Please send me details on Federal Trucks of ..... tons capacity for ..... use.

Name .....

Company .....

Address .....

City ..... Zone ..... State .....

FEDERAL TRUCKS

Terrazzo

lets the "help" off easy

The hospital lobby floor illustrated is easy to keep spotless because it's hard to hurt. TERRAZZO is practically mar-proof, so benches are pushed aside, not worked around. Highly stain-resistant, TERRAZZO requires only routine washing and cleaning. Marble-hard and concrete-durable, it's easy on the "help."

Versatile as an architect's imagination, TERRAZZO allows infinite combinations of patterns and colors. Specify colorful, long-lasting TERRAZZO—for individuality and trouble-free service.

Write for free A.I.A. Kit, the complete reference work about TERRAZZO.

SEE OUR CATALOG IN SWEET'S

THE NATIONAL TERRAZZO AND MOSAIC ASSOCIATION, INC.

711 Fourteenth St. N. W. Dept. E Washington 5, D. C.

"No transaction is ever considered closed where any dissatisfaction is known to exist on the part of the customer, who is assured of courteous and fair treatment without regard to the extent of his business."

Why Each Gurley Transit Carries This Guarantee

BECAUSE Gurley produces *all its own parts* from the casting up . . . it has its own foundry, toolroom and optical facilities—

BECAUSE of 103 years of continuous and undivided concentration on instrument making—

BECAUSE Gurley design and engineering methods are guided by the field man's problems—

That's why four generations of engineers have said, "Give me a Gurley." *Write for Bulletin 50.*

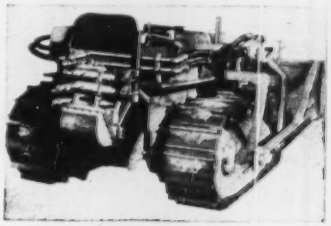
W. & L. E. GURLEY

Union Plaza Troy, New York

GURLEY

Surveying & Scientific Instrument Makers Since 1845

nished with 150 ft of ¾-in. 6x19 plow-steel wire rope. It weighs 75 lb. Cable runs over pulleys at top and back of unit, arranged so that the cage will always hang in an upright position, with no possibility of tilting. Hard-rubber rollers on front of unit prevent marring of working surfaces. — SAFWAY STEEL PRODUCTS, INC., 6234 W. STATE ST., MILWAUKEE 13, WIS.



Hydraulic Control Unit

Capable of handling any number of ram-operated attachments simply by adding additional valves, this hydraulic control unit is adaptable to all crawler tractors. Pump, valves, and tank are in one unit. Pump capacities vary from 25 to 65 gpm at 1,000 rpm. Maximum recommended working pressure is 1,000 psi.—KAY-BRUNNER STEEL PRODUCTS, INC., EQUIPMENT DIVISION, 2721 ELM ST., LOS ANGELES 65, CALIF.

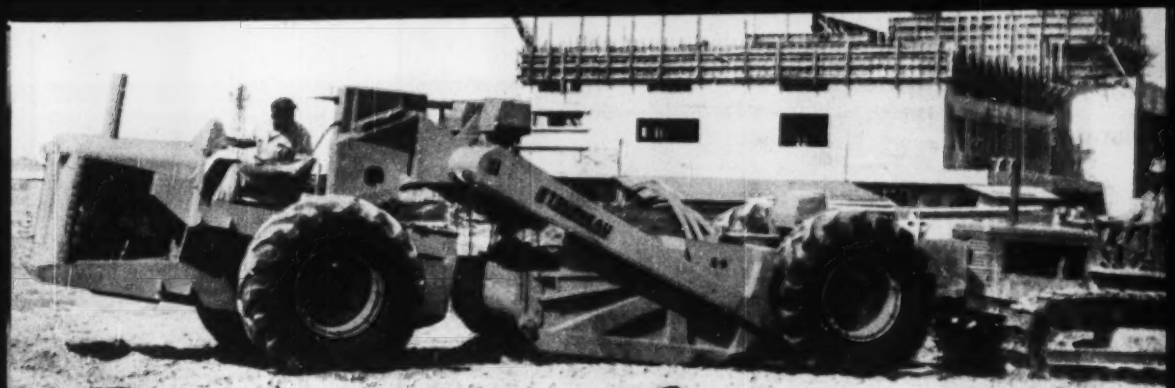
All-Steel Fairleader

Feature of all-steel fairleader is that it has a throat large enough to pass a joint made with Crosby wire-rope clips. It is designed for applications where an off-lead is necessary or where more universal swiveling is required than is possible with a snatch block. Available for ¾, 1, and 1¼-in. wire rope, it will withstand 100 percent of the strength of the rope.—AMERICAN HOIST & DERRICK CO., 63 S. ROBERT ST., ST. PAUL 1, MINN.

Liquid Stainless Steel

Tough, adherent, abrasion and chemical-resistant coating consists of microscopically fine flakes of 18/8-type No. 302 stainless steel held together by a plastic binder. These plastics make the stainless steel flexible enough to stand bending back on

(Continued on page 105)



"Best machine I ever used..."

Positive power steer, and 4-wheel, disc-type air brakes let operators use Roadster's 25 m.p.h. hauling speed with complete confidence and safety.

In addition to their 2 electric-control "D's", Hutchinson & Wyatt also have a LeTourneau LS Carryall, Rooter and rubber-tired Tournadozer on Kanawha Airport.

says C.E. Wyatt, of Hutchinson & Wyatt, who have just bought their 2nd "D" ROADSTER

To extend taxiways on the Kanawha County Airport, at Charleston, W. Va., Hutchinson & Wyatt, of Sandyville, contracted for 72,000 yards of grading. They tried a 25 m.p.h. D Roadster on the job . . . liked its production dirtmoving ability . . . and quickly added a second Roadster. Here's the kind of yardage performance that got the repeat order:

Average 2500' cycles every 3.5 min.

Using a pusher tractor to speed loading in the hard, sun-baked clay, each Roadster loaded 6 pay yards in 20 seconds . . . averaged a 2500' cycle every 3.5 minutes. Daily production records show that the two high-speed "D's" consistently delivered a total of 28 loads an hour . . . 1512 pay yards a 9-hour day.

Not only is this fast, rubber-tired, Roadster profitable in fleet operation with a pusher . . . it can also self-load in most easy materials . . . gives you a mobile, utility rig for independent, one-man operation on scattered, maintenance-type dirtmoving assignments. Ask your LeTourneau Distributor for facts and figures on what the D Roadster can do for *you* . . . see for yourself why owners like C. E. Wyatt say, "It's the best machine I ever used!"

LETOURNEAU PEORIA, ILLINOIS — JOB-PROVED — **TOURNAPULLS**

MORE WORK PER HOUR WITH RUBBER-TIRED POWER

KOEHRING 2½-yard 1005 has plenty of power, stamina and weight-stability to hold solidly when digging into the toughest rock banks. It's *specially-engineered* for heaviest 2½-yard service.

Every operating assembly, from the 1005's cast-alloy crawler shoes to boom point, is extra-heavy-duty to meet the typical strains of 2½-yard digging. Crawler frames and axles are separate units from the carbody . . . provide "give" in the excavator base. Crawlers are easily moved in for shipping clearance. Positive traction-brake steering provides exceptional maneuverability. Center pivot bearings protect vertical traction shaft from horizontal stresses . . . husky hook rollers resist vertical stresses. Compact upper machinery, on one-piece turntable, is simple, accessible.

Big 37", double-band swing clutches are self-equalizing. Clutch housings constantly rotate, dissipate heat, give smooth, cool operation. Entire machine is 100% mechanical . . . no complicated hydraulic or air systems requiring service specialists. Adjustments are easily made by operator.

Operators also like the way the 1005's big, 48" power clutch retains "feel" of load . . . with only 1/10th the normal lever pull. Another Koehring feature, instantaneous dipper trip, works *every time* . . . saves spillage . . . speeds loading for top yardage output.

This heavy-duty Koehring 1005 is diesel powered, can also be furnished with electric motor. Quickly converts from shovel to dragline, clamshell or lift crane. Safely lifts up to 79½ tons . . . boom sections up to 120', plus 30' jib. Other Koehring excavator sizes: ½-yd. 205, ¾-yd. 304, 1½-yd. 605.

YOUR KOEHRING DISTRIBUTOR SEE HIS THE YELLOW PAGES OF YOUR LOCAL TELEPHONE DIRECTORY

KOEHRING COMPANY
MILWAUKEE 10, WIS.

SUBSIDIARIES: JOHNSON • PARSONS • KWIK-MIX

FOR *Power Strength Weight*

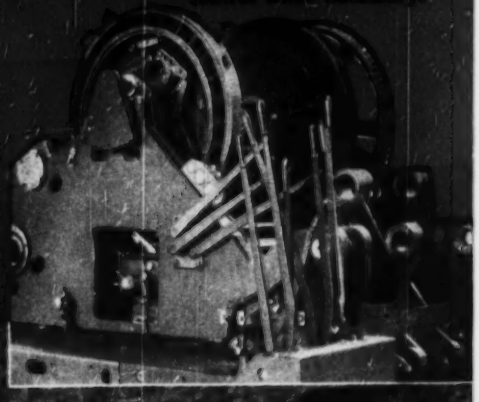
- EVERY ASSEMBLY HEAVY, POWERFUL . . . ENGINEERED SPECIALLY FOR SHOVEL EXCAVATOR SERVICE

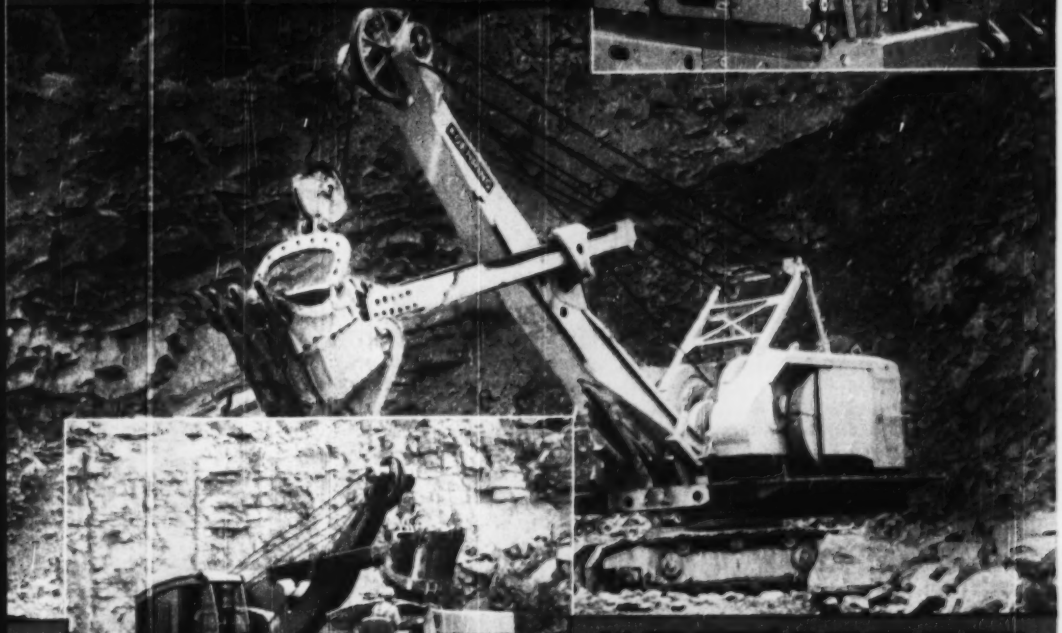
- PLENTY OF WORKING WEIGHT BEHIND POSITIVE CHAIN CROWD FOR DIGGING INTO ROCK BANKS

- RIGID BOX-DESIGN BOOM, MASSIVE SHOCK ABSORBER MOUNTING, DOUBLE DIPPER STICKS, TORSION-RESISTANT SHIPPER SHAFT, ALL ABSORB STRESSES OF FAST ROCK HANDLING

- SAFELY LIFTS UP TO 79½ TONS. Booms or attachments to 120', plus 30' lift

- LONG LEVER PULL GIVES 840 40" POWER CLUTCH . . .



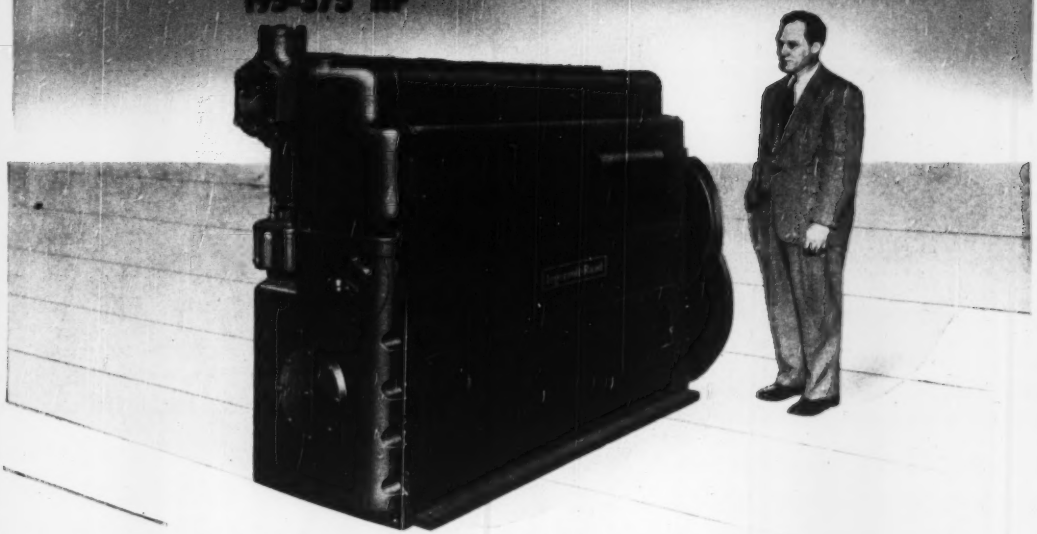


Now For The First Time

A SMALLER, LIGHTER, HEAVY-DUTY DIESEL ENGINE

The Ingersoll-Rand TS

195-375 HP



Here's the heavy-duty Diesel that engineers have been looking for . . . a 4-cycle, single-acting engine that weighs only 30 lbs per hp, and consumes only 0.40 lbs of fuel per hp-hour.

The Ingersoll-Rand TS Diesel is available with 6 or 8 in-line cylinders, delivering 195 to 375 continuous hp at 900 to 1000 rpm. What's more, the new TS Diesel has the extra stamina and dependability of big-engine design. Its 5¼"-diameter crankshaft is extra-large for a 7"-bore engine.

Movable	but NOT Automotive Type
Low Weight	but Moderate Speed
Small Size	but BIG-Engine Design
Powerful	but LOW Exhaust Temperatures
Perfect Balance	but NO Balancing Devices

These results have been achieved by using an improved combustion system with single-hole injection nozzles, a gear-driven supercharger providing additional scavenging air for internal cooling, an increased overlap of exhaust- and intake-valve openings, and a big crankshaft. One of the distinctive low-maintenance and long-life features is its aluminum-alloy full-floating bearings . . . with each half bearing being interchangeable for main and crankpin bearings.

Engineers who have seen the TS Diesel agree that it is the outstanding advance in diesel design in the past decade. Write today for more information on the new TS Diesel . . . or for greater power ask about the well-known S and SS Diesels up to 900 hp.

The New Ingersoll-Rand TS Diesel is ideal for:

Drilling Rigs	Locomotives	Emergency
Shovels	Drag Lines	Generating
Crushers	Cranes	& Pumping
Scrapers		Units

And for any service requiring continuous full-load economical operation.

Ingersoll-Rand

11 Broadway, New York 4, N. Y. 500-7

COMPRESSORS · AIR TOOLS · ROCK DRILLS · TURBO BLOWERS · CONDENSERS · CENTRIFUGAL PUMPS · OIL & GAS ENGINES

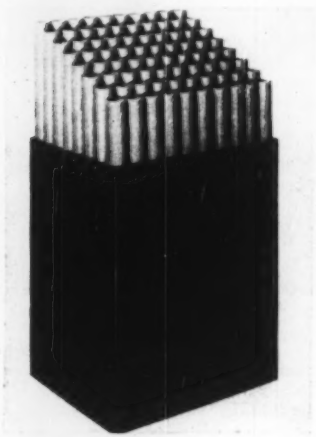
itself, and add to the corrosion resistance of the steel. Neither steel nor binder are appreciably affected with age. The coating can be applied by spray, brush, or dipping. The material dries tack free in 5 min.—THE LOCKREY-FATER CORP., 401 BROADWAY, NEW YORK 13, N. Y.

Mechanical Booster Clutch

Reductions of lever pull up to 50 percent in excavator operation are possible with new mechanical booster clutch. This clutch is designed with two separate load-carrying bands, one of which helps to set the other. A heat-compensator spring, which changes tension automatically, provides a means of controlling amount of power transmitted by the clutch to fit all applications and varying requirements for shovel, dragline, clamshell, crane, or hoe work. The clutch is designed for use on the Model 304 Koehring ¾-yd excavator. — KOEHRING CO., 3026 W. CONCORDIA AVE., MILWAUKEE 16, WIS.

Shaft-Torque Calculator

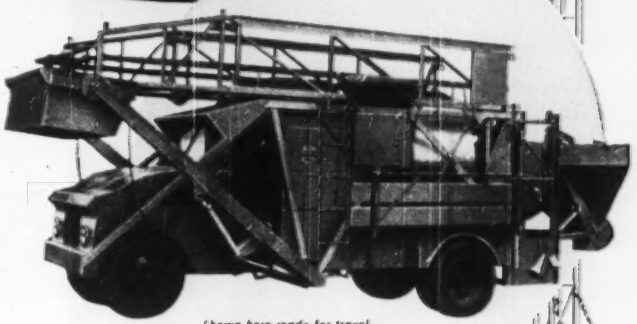
Torque loads on flexible-shaft equipment are quickly computed with slide-rule-type calculator. This pocket-size unit solves torque problems and indicates size of shaft which performs most efficiently at a given rpm. within a given radius. Available free by writing on company letterhead.—STOW MFG. CO., BINGHAMTON, N. Y.



Blueprint Filing Cabinet

Tubrak for filing drawings, blueprints, and tracings has a lattice construction which holds eighty 2x36-in. removeable cardboard tubes. Lattice work can be varied to accommodate 2, 2½, or 3-in. tubes. Bins are keyed by numbers in front and alphabet letters on the side to simplify locating individual drawings. — SCOTT-RICE CO., 610 S. MAIN, TULSA, OKLA.

CONCRETE MIXING and POURING ON THE JOB!



Shown here ready for travel. A Complete Mobile Concrete Mixing Unit and Elevator.

GREATER PROFIT ON EVERY JOB!

THE ONE-YARD MIXERMOBILE GIVES: Complete mobility . . . more jobs covered per day! One complete unit means more economy on every job. It saves the cost of hauling and erecting a tower. It saves the cost of hoist and storage hopper because these are included with the attached tower. It saves through the use of dump trucks . . . concrete is mixed on the job (with specially designed scale batch aggregates can be weighed for actual weight mixing).

READY MIX ECONOMY WITH MIXERMOBILE. Use the Mixermobile as a portable elevating and agitating storage plant for ready mix concrete. With storage capacity of 4½ cubic yards, Mixermobile eliminates costly stand-by time of ready mix trucks. One man handles the complete operation, both mixing and elevating. Save time, labor with Mixermobile.

Turns Out 200 Cubic Yards of Concrete Per Day

FEATURES INCLUDE: Hydraulic Controls; Discharge Timer; Fool-Proof Water Control System.

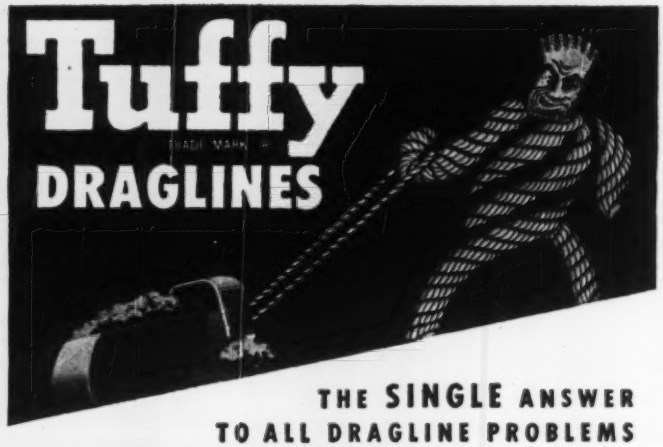
WRITE TODAY FOR LITERATURE AND YOUR NEAREST DEALER

We reserve the right to make improvements in design and specifications without notice.

MIXERMOBILE MANUFACTURERS

Box 7527 • Portland 20, Oregon

Tuffy
TRADE MARK
DRAGLINES



THE SINGLE ANSWER TO ALL DRAGLINE PROBLEMS

Just the Size, Length and Name . . . TUFFY . . . No More Confusing Specifications

Try this simple way of buying draglines. Put Tuffy draglines to any test. Watch them come out on top with unequaled, money saving service records.

Extra Flexibility. **Wires of the finest steel in a construction designed for universal dragline service, gives Tuffy draglines the extra flexibility needed without sacrificing other qualities.**

Maximum Abrasive Resistance **is obtained by finer technic in construction with materials toughened to withstand more abrasive wear.**

Easy To Handle **because it is pliable. Tuffy Draglines spool better and ride better on grooves.**

Hugs Drum When Casting **because jerking, pulling and bending stresses do not distort its pliable construction.**

Stamina Proved In All Operations. **Operating in dry dirt, wet dirt, sand, gravel, rock and minerals and on all types of equipment, Tuffy Draglines stand up under more days of service and move far more yardage than the best previous average obtained by many operators.**

Remember, Tuffy is the name to remember.

union Wire Rope corporation

2228 Manchester Ave., K. C., Mo. Send Complete details on Tuffy Draglines.

FIRM NAME_____

ADDRESS_____

CITY_____ STATE_____

ERIE
DOUBLE SUCTION
TYPE S
CENTRIFUGAL PUMPS

BELT MOTOR OR ENGINE DRIVE

Sizes from 2" to 12"

Write for Bulletin No. 38

ERIE PUMP & ENGINE WORKS

152 Glenwood Ave. Medina, N. Y.

STEEL · PLATE · WORK

Fabricators and welders of all classes of steel and alloy metals. Over 100 years experience. Crane capacity 45 tons. Heavy plate shop equipment. Stress relieving furnace — 33' x 18' x 16' up to 2100° F. If you have a job that calls for a builder, not a manufacturer, send us the blueprints — talk to our engineers. Metals Fabrication Div., The Pusey and Jones Corp. 502 E. Front St., Wilmington, Del.

PUSEYJONES

Manufacturers' Publications

Conveyor Handbook—Two systems of ordering conveyors are described in detail in this 52-p handbook. Plan 1 covers pre-engineered conveyors; Plan 2, job-engineered units. The booklet shows how to solve almost any conveyor problem including how wide and how long the conveyor belt should be; correct angle of incline; spacing of idlers; and motor horsepower required. Tables simplify selection of conveyors for any operating conditions. The booklet is free of technical formulas and figures.—Pioneering Engineering Works, Inc., 1515 Central Ave., Minneapolis 13, Minn.

Portable Power Tools—Pocket-size catalog (32 pp) lists complete line of portable power tools. Items listed include electric hammers, gasoline hammers, paving breakers, rock drills, spike drivers, vibrating floats, concrete-form vibrators, concrete mass vibrators, electric drills, electric screwdrivers and nut runners, electric grinders, and electric sanders and polishers.—Syntron Co., 328 Lexington Ave., Homer City, Pa.

Hose Selection Guide—Handbook contains information on the selection, installation, and servicing of oil and gasoline hose. Data are furnished on principal types of hose used for various types of applications.—New York Belting & Packaging Co., 1 Market St., Passaic, N. J.

Socket Screws—Engineering data on various types of Parker-Kalon socket screws are contained in 16-p Bulletin 490. The catalog features pictures and captions illustrating the company's production facilities and precision quality control. Stripper bolts, pipe plugs, and hex keys are also described.—Parker-Kalon Corp., 200 Varick St., New York 14, N. Y.

Oilless Wood Bearings—Engineering manual treats with principles and applications of oilless wood bearings in machine design. The first book of its kind on the subject, the manual endeavors to explain the correct use and operating advantages of these bearings. Examples cited include: Where bearing and lubricant must act efficiently under continuous or alternating high and low temperatures; where bearings must withstand moisture and corrosive factors; where bearings must remain self-lubricating for a long term of

(Continued on page 108)

JOIN UP WITH Flintseal

AND SAVE TIME, MONEY, AND TROUBLE!

Here's a friend that sticks! Through fair weather and foul. Under all kinds of conditions.

This rubber-bearing, thermoplastic compound seals joints smoothly, neatly, *positively*...and far outlasts old-fashioned materials.

1) Special equipment enables you to melt and pour Flintseal® quickly, safely, economically...and gives you a neat, smooth-riding joint.

2) Flintseal adheres to concrete with a tight, lasting bond, effectively sealing out moisture and other foreign matter that wreak havoc between and under the slabs.

3) Flintseal stays resilient. It won't become brittle and crack in coldest weather, nor will it flow on hottest days.

4) Because of this *lasting* resilience and adhesion, Flintseal maintains a tight joint throughout repeated cycles of expansion and contraction of the slabs.

Exceptionally satisfactory for sealing joints and cracks in concrete, Flintseal is finding wide use on municipal pavements, highways, airport runways and many smaller jobs in swimming pools, roofs, platforms and the like.

Get complete information on how joining up with Flintseal can save *you* time, money and trouble...by giving you a fast neat job, and cutting maintenance costs to the bone. Write today for your copy of the free folder illustrated.

®T. M. Reg. U. S. Pat. Off.

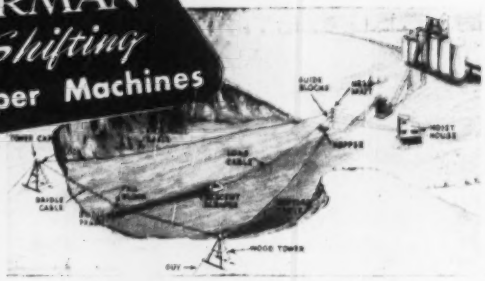
THE FLINTKOTE COMPANY
Industrial Products Division
30 Rockefeller Plaza, New York 20, N.Y.
ATLANTA • BOSTON
CHICAGO HEIGHTS • DETROIT
LOS ANGELES • NEW ORLEANS
WASHINGTON
TORONTO • MONTREAL

FLINTKOTE INDUSTRIAL PRODUCTS

Flintseal

HOT-POURED JOINT-SEALING COMPOUND

SAUERMAN
Rapid Shifting
Drag Scraper Machines



Speed Up Digging in Hard Deposits

Move More Tons Hourly with Same Power

NEW SERIES, Sauerman Power Drag Scraper Machines give operator at scraper hoist COMPLETE AUTOMATIC CONTROL of shifting tail end of machine—and instant spotting of scraper bucket wherever he wishes. Results: greater speed and economy—time and labor saved.

Feature of machine is Sauerman 3-drum hoist and elevated tail bridle assembly. Bridle cable is stretched between 2 tail towers. Bridle frame for tail block rides on cable. Third drum of hoist moves bridle frame in one direction and pull of outhaul cable, the opposite. Drum when braked holds frame positioned as desired.

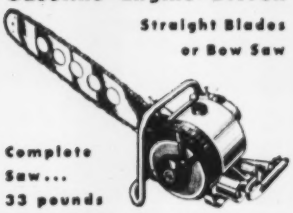
Equipped with ⅓ to 4 cu. yd. Crescent buckets. Gasoline, electric, or diesel 3-drum roller bearing hoist furnished with each machine. Normal cable spans from 200 to 400 ft., can be extended if necessary.

Send for Sauerman Catalog 19-A for full details, illustrations, etc.

SAUERMAN BROS., INC.
532 S. Clinton St. Chicago 7, Illinois

HOMELITE
One Man
CHAIN SAWS
Gasoline-Engine-Driven

Straight Blades or Bow Saw



Complete Saw... 33 pounds

Easiest Handling
Fastest Cutting
Lightest Weight
Lowest Maintenance

HOMELITE CORPORATION
1103 RIVERDALE AVENUE
PORTCHESTER, N. Y.

Please send complete data on Homelite Gasoline Chain Saws.

Names .....

Address .....

PHOENIX BRIDGE COMPANY
Engineers—Fabricators
Erectors
Structural Steel
BRIDGES and BUILDINGS
General Office and Shops
PHOENIXVILLE, PA.
Subsidiary—Barium Steel Corporation

35 Years' Experience
GUNITE CONSTRUCTION
Bridges, stacks, bunkers, pipe lining, steel encasement, repairs to disintegrated masonry, etc.
WE SPECIALIZE IN DAM REPAIRS
WHITE & McCOLL, INC.
75 WEST STREET
NEW YORK 6, N. Y.
Phone HAnover 2-0526

years; where it is desirable to protect shafts and journals from scoring; where other types are not available; and where elimination of noise is important.—EDWARD CAMP ADVERTISING, 2 CLAREMONT SQUARE, WORCESTER 3, MASS.

All-Metal Slide Rules—Eight types of all-metal slide rules are listed in pocket-size folder. A feature of the folder is a listing of 14 ways in which the P&E deci. scale arrangements increase accuracy and simplify figuring. The bulletin describes construction of the slide rules, and lists several features.—PICKETT & ECKEL, INC., 5 S. WABASH, CHICAGO 3, ILL.

Insulated Piping Systems—Technical data books illustrate and describe the manufacture, construction, and installation of various types of Ric-Wil insulated piping. Technical data on piping systems and available Ric-Wil services are also included in Section 480-4. Catalog Section 480-5 contains fully illustrated technical data and specifications on all phases of insulated piping—its structure, properties, and installation procedures.—THE RIC-WIL CO., DEPT. J-1, UNION COMMERCE BLDG., CLEVELAND, OHIO.

Asphalt Mastic Flooring—Acid resisting, waterproof, slipproof, and long-wearing qualities of Rulon asphalt mastic floors are presented in illustrated catalog. Complete information concerning these durable, quickly installed, and economical floors, together with specifications, are contained in the catalog.—RALPH V. RULON, INC., 3900 N. 2ND ST., PHILADELPHIA 40, PA.

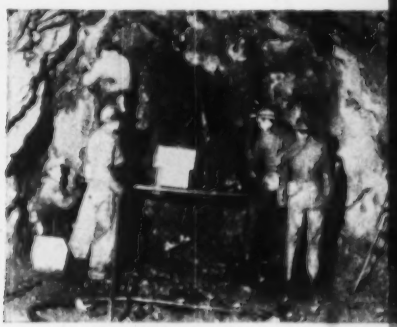
Revolving Airplane Hangar—Use of revolving hangar results in saving as much as two-thirds of hangar area. Complete information on use and construction of Roto-Hangars is contained in 4-p folder. Emphasis is placed on illustrating how these units save space and manpower, their construction, and other features. An exploded view is used to illustrate operation of the hangar.—ROTO-HANGAR CO., INC., 13610 SOUTH CENTRAL AVE., LOS ANGELES 2, CALIF.

Fork-Lift Trucks; Towing Tractors—General catalog covers the Clark line of fork-lift trucks and towing tractors. All pertinent facts necessary to a preliminary consideration of materials-handling machines are easily and quickly available. Data is arranged to make comparisons between various models as simple as possible.—CLARK EQUIPMENT CO., INDUSTRIAL TRUCK DIVISION, BATTLE CREEK, MICH.

"We saved on dynamite costs by switching to Du Pont 'MS' Delay Caps!"

the Blue River Tunnel project at
nt, Colorado, dynamite costs were
terially reduced when Du Pont "MS"
ay caps* were substituted for regular
ays, explains H. R. Oliver, engineer.

Hook-up was easy. Substitution of "MS" delay caps proved to be only a matter of replacing the regular delays with the equivalent numbered period of Du Pont "MS" Delay Electric Blasting Caps.



Best loads were found for the 30-hole, 5½-foot rounds by gradually reducing the amount of dynamite used in a series of trial blasts. Loads of 122, 84, 66, 58 and 60 pounds were used in that order.

third round proved most satisfactory.
ed with "MS" delay caps, it was loaded
h 66 pounds of dynamite—almost a
% saving compared to the 130-pound
d used with regular delay caps.

Face still pulled clean with this reduced load, and 75% of the muck fell within 30 feet of it. Besides dynamite savings, Du Pont "MS" Delay Electric Blasting Caps gave many other advantages.

Overbreak was practically eliminated, reducing the number of cars of muck per round from 36 to 32. No unexploded dynamite was found in the muck, and surrounding rock was not shaken up. Fragmentation was good.

See what help Du Pont "MS" delay caps can be to you on your projects. Ask your Du Pont explosives representative for complete information.

*"MS" (*Millisecond*) *Delay Electric Blasting Caps are available in 14 periods of delay:* MS-25, -50, -75, -100, -125, -150, -175, -200, -250, -300, -350, -400, -450, *and* -500.

E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

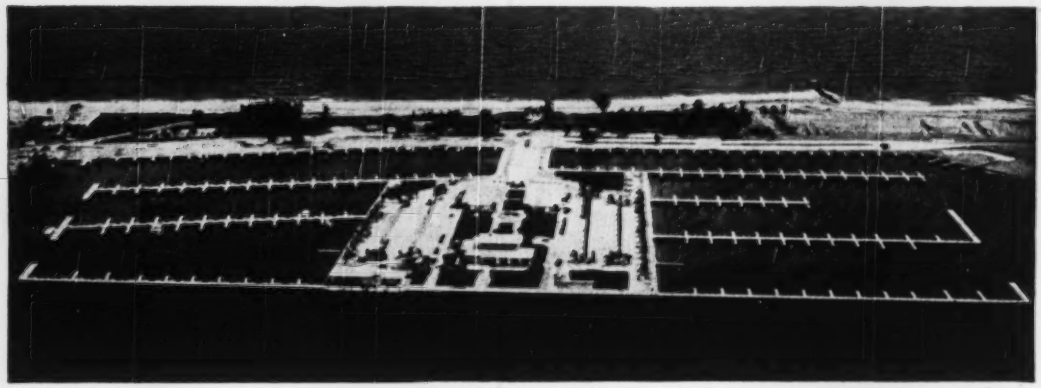
DU PONT EXPLOSIVES

Blasting Supplies and Accessories

DU PONT

REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*



Bahia-Mar Yacht Basin facilities include berths and appurtenances for approximately 500 craft.

The yacht basin that came off the "assembly line"...

made with LEHIGH EARLY STRENGTH CEMENT

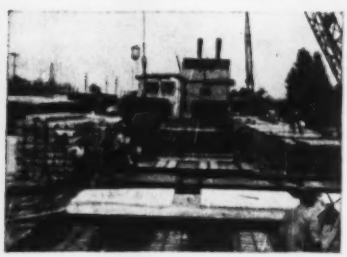
Fort Lauderdale's new Bahia-Mar Yacht Basin had to be ready for business before the 1950 season opened. This called for careful planning and the right material. With well organized construction methods and Lehigh Early Strength Cement, one operation followed the other with "assembly line" speed and precision . . . and the job was finished on time.

The concrete piles, pier slabs and bulkhead slabs were precast in Powell Brothers' yard and barged to the site. Because the concrete reached service strength in one quarter of the usual time, the supply could be so closely controlled that changes in pile lengths could be made without retarding job progress.

Using templets for aligning the piles and supporting the slabs, an average of 80 feet of bulkhead and 100 linear feet of pier were set in place daily. Six 30-ft. docks were frequently erected in a day with one derrick and barge crew.

This streamlined construction job is but one of many important projects where Lehigh Early Strength Cement helped to save time and cut costs. Our Service Department will be glad to help you with your specific problems.

Within basin are 4500 linear feet of precast bulkhead, 2700 feet of which encircles island and 1800 feet on Sea Breeze Ave.



Portion of Powell Brothers' yard where precast concrete units were poured.

LEHIGH PORTLAND CEMENT COMPANY

ALLENTOWN, PA. • CHICAGO, ILL. • SPOKANE, WASH.

LEHIGH PORTLAND CEMENT • LEHIGH EARLY STRENGTH CEMENT
LEHIGH AIR-ENTRAINING CEMENT • LEHIGH MORTAR CEMENT

OWNERS: Bahia-Mar Corporation. **GENERAL CONTRACTORS:** Universal Construction Co., Inc., Fort Lauderdale, Fla. **ENGINEERS:** J. H. Philpott and E. V. Ackerman, Fort Lauderdale, Fla. **ARCHITECTS:** Grunkemeyer & Sullivan Associates, Cincinnati, Ohio. **CONTRACTORS FOR CONCRETE WORK:** Powell Brothers, Inc., Fort Lauderdale, Fla.

Lehigh CEMENTS

ADVERTISERS IN THIS ISSUE

Alexander Hamilton Institute 53
Allied Steel Prdcts., Corp. 73
American Mutual Liability Ins. Co. 56, 57
American Steel Dredge Co., Inc. 74
Armco Drainage & Metal Products, Inc. 16

Blaw-Knox Div. of Blaw-Knox Co. 20

Cast Iron Pipe Research Assn. 6, 7
Ceco Steel Prdts. Co. 44, 45
Cement Gun Co. 73
Chicago Bridge & Iron Co. ..... 2nd cover
Cleveland Trencher Co., The 52
Concrete Surfacing Machy. Co. 111
Continental Steel Corp. 111

David House Moving Co., E. F. 80
Deming Co., The 46

Erie Pump & Engine Wks. 106

Federal Motor Truck Co. 99
Flexible Steel Lacing Co. 78
Flintkote Co. 107

Goodrich Co., The B. F. 3
Gunite Concrete & Construction Co. 58
Gunite Florida Corp. 74
Gurley, W. & L. E. 100

Hayward Co., The 80
Hendrix Mfg. Co., Inc. 64
Homelite Corp. 108
Hooper & Sons Co., William E. 11
Horn Co., Inc., A. C. 67

Imperial Pencil Tracing Cloth 55
Independent Pneumatic Tool Co. 83
Ingersoll-Rand 104

Jaeger Machine Co. 12, 13

Keasbey & Mattison Co. 60
Koehring Co. 102, 103

Lehigh Portland Cement Co. 110
Leupold & Stevens Instruments 2
LeTourneau, Inc., R. G. 101
Leyman Mfg. Corp. 52
Lincoln Electric Co., The 63
Link-Belt Speeder Corp. 54
Lufkin Rule Co., The 51

McKiernan-Terry Corp. 80
Mixermobile Mfgrs. 105
Moretrench Corp. 68
Murphy Diesel Co. 5

National Terrazzo & Mosaic Assoc., Inc., The 100

Owen Bucket Co., The 10
Owens-Illinois Glass Co., Kaylo Div. 71
Ozalid Div., General Aniline and Film Corp. 62

Phoenix Bridge Co. 108
Pioneer Engineering Works 59
Pittsburgh-Des Moines Steel Co. 78
Pusey & Jones Corp., The 106

Quaker State Oil Refining Corp. 8

Raymond Concrete Pile Co. ..... 3rd cover
Reo Motors, Inc. 22
Richmond Screw Anchor Co., Inc. 48
Rogers Bros. Co. 14

Sauerman Bros., Inc. 108
Smith Co., S. Morgan 1
Sprague & Henwood, Inc. 58
Standard Oil Co. of Indiana 77
Stemco Corp. 50

Timber Engineering Co. 74
Timken Roller Bearing Co. ..... 4th cover
Truck Mixer Mfgrs. Bureau 4

Union Wire Rope Corp. 106
Unit Crane & Shovel Corp. 9

Wallace & Tiernan Co., Inc. 18
Wayer Impactor, Inc. 79
Wellman Engineering Co. 58
White & McColl, Inc. 108
Wisconsin Motor Corp. 74
Worthington Pump & Machry. Corp. 5

Yeomans Bros. Co. 61

Professional Services 93, 96, 97

SEARCHLIGHT SECTION

(Classified Advertising)

Employment
Positions Vacant 88, 89
Civil Service 88
Selling Opportunities Offered 89
Positions Wanted 89, 90
Part Time Work 90
Selling Opportunities Wanted 90

Educational
Schools 90

Business Opportunities
Offered 90

Notices
Proposal 85-88, 97

Property
For Sale 90

Equipment
(Used or Surplus New)
For Rent 90, 92
For Sale 90-94
Piling 91
Rail 92
Surveying Instruments 94

Wanted
Equipment 90

ENGINEERING NEWS-RECORD

Howard Olsen, Business Manager — C. R. Rabel, Sales Manager

Sales Representatives: Fred G. Hudson, L. H. Hunt and H. L. Keeler, 520 N. Michigan Ave., Chicago 11; Ralph Dorland, 68 Post Street, San Francisco 4; D. S. Robertson and W. G. Payne, 330 W. 42nd St., New York 18; A. B. Cozens, 12th and Sansom Sts., Philadelphia 7; E. E. Duff, Jr., Hanna Bldg., Cleveland 15; B. F. Horn, Penobscot Bldg., Detroit 26; W. E. Donnell, Continental Bldg., St. Louis 8; C. E. McReynolds, 621 So. Hope St., Los Angeles 14; Ralph Maulsby, Rhodes-Haverty Bldg., Atlanta 3; J. H. Allen, First National Bank Bldg., Dallas 1. Other sales offices—2500-09 Oliver Bldg., Pittsburgh 14; 7 Stadler Bldg., Boston 16; Aldwych House, London, England.

"BERG"
CONCRETE SURFACER MODEL A

"Berg"" equipment is used extensively for surfacing and finishing applications on concrete construction.

The many "BERG" Models available, permit exact selection for your particular application.

The distinctive "BERG" features give you the kind of results that are realized in better quality work, combined with lower costs.

"BERG" Heads and Attachments are interchangeable, thereby providing adaptability for vibrating, wire brushing, sanding and polishing applications.

THE CONCRETE SURFACING MACHINERY CO.
4667 SPRING GROVE AVE.
CINCINNATI 32, OHIO

CONTINENTAL FENCE

MADE OF KONIK STEEL

THE ONLY FENCE . . . . . .

Here's the only fence made of KONIK steel. No other fence gives you property protection at such low cost per year of fence life. For greater strength . . . extra elasticity . . . "clear through" rust resistance, get Continental Chain Link. Mail coupon below for more information about this better fence. Write Continental at Kokomo, Indiana.

*Trade Marks Reg. U. S. Pat. Off.

CONTINENTAL STEEL CORPORATION
Kokomo, Indiana

Please send FREE copy of "Planned Protection"—complete manual on property protection.

Name _____
Address _____
City _____ State _____

CONTINENTAL STEEL CORPORATION

PERSPECTIVE . . .

How to get pollution abated

There's a lot of talk about the great need to stop pollution of our streams and coastal waters. But too little is said of what's being done.

Connecticut offers a good example of what's going on. Urged on by the State Water Commission—the oldest comprehensive pollution abatement agency in the country—municipalities and mills are getting places.

• **Plan of attack**—Commission Director Richard Martin and Chief Engineer William S. Wise are using a "Group Cooperation Approach." All industries in the state making the same type of product—and the same kind of wastes—are called together. The SWC outlines the problem, points out how it can be solved, states its intention to use its authority to force action—and gives mill owners an opportunity to ask questions, comment and make suggestions.

The industries appoint a committee to work out details with the SWC and ask for time to gather additional facts for further discussion. The request is granted. More meetings are held. Differences are resolved. Agreement is reached on a program satisfactory to the state and acceptable to the mills and their management.

• **Industries approached**—The Nutmeg State's 20 paper and paper board mills, in May 1948, were the guinea pigs for the new idea. SWC, using its Group Cooperation approach, accomplished in a day what would have taken a month by going "door to door."

Another get-together was held in September. The mills proposed that the technical staff of the National Council for Stream Improvement of the Pulp, Paper and Paper Board Industries make a detailed survey of each paper-mill problem. SWC agreed. The studies were completed last fall. Results corroborated the technical findings of the commission. The mills know now what they need to do. The overall equity of various solutions is thoroughly understood by all parties concerned.

Result: More than 40% of paper-mill wastes are now being treated. SWC expects that by 1952, no paper-mill discharge will contain more than half a pound of suspended solids per 1,000 gal.

"Group Cooperation Approach" was next applied to municipalities, brass mills, hat and hat-fur factories. It met with the same promising response. Other sections of industry will be called in later. Right now, SWC has a lot of hay down both with industries and municipalities and wants to get it into the barn before cutting more.

• **Municipal wastes**—Swinging over to the municipal side, SWC drew up a list of communities that have collecting sewers but lack adequate treatment plants. The list was in descending order of volume of untreated sewage discharged.

From this listing, Bridgeport, Waterbury, Norwich, and New London have been ordered to build disposal plants. Bristol, the Metropolitan District of Hartford; New Haven, Winsted, Plainville, Fairfield, Broad Brook and Worthington Ridge have undertaken construction programs on their own initiative. Naugatuck has agreed to a time schedule for building a treatment plant. Norwalk and Groton have speeded preparation of detailed plans. Ansonia, Derby and Shelton are exploring the feasibility of one plant to serve the three communities. SWC has supported this joint undertaking as most efficient and economical for these cities, but it cannot order the political units to combine.

• **Financing**—A year ago, towns and cities in Connecticut thought they needed additional enabling legislation. SWC, with help from bond attorneys and municipal-finance experts, wrote and obtained passage by the 1949 General Assembly of an act giving all municipalities broad home-rule authority for construction, operation and financing of sewerage systems. The act sets up sewerage authorities with bond-issuing and revenue-collecting powers. Cities may build and operate industrial-waste treatment plants and finance them with assessments against factories served.

• **Combined disposal**—In densely populated and heavily industrialized areas, many industrial wastes can be disposed of satisfactorily only by discharging them to the municipal treatment plant. Several big-city plants treat large volumes of factory wastes. In seven communities, factory wastes nearly equal or exceed sewage flow. In such cases, SWC believes the municipality must retain supervision over pre-treatment units, authority to regulate wastes received and the right to stop taking industrial wastes, if such a step should be deemed to be necessary for protection of the sewage-treatment process.

• **Research**—Unique in one respect, the Connecticut pollution abatement law requires the SWC to tell each industry how its particular waste can be treated economically. To unearth the answers, it sponsors research programs: at Yale University—metallurgical wastes; Wesleyan University—textile and paper wastes and biological treatments; University of Connecticut—dairy and dye wastes.

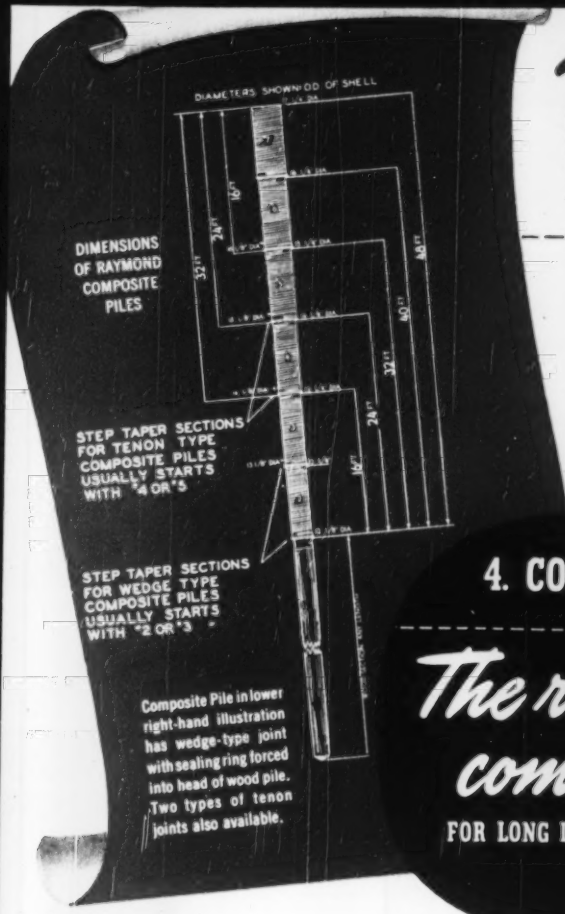
• **Budget**—SWC administers a comprehensive water-resources-management program having a responsibility for pollution control, safety of 4,000 dams, flood control, river and harbor improvement, hydro-electric development at multi-purpose dams, prevention of shore and beach erosion, stream gaging, groundwater inventory, and water-quality studies. Its program is coordinated with those of the state soil-conservation and mosquito-control services and those of interstate pollution-control compacts involving Rhode Island, Massachusetts, New York and New Jersey. It operates with an engineering and clerical staff of nine persons and an annual budget of $80,000. Less than half its money and man-hours are available for pollution abatement. The rest must be devoted to other duties.

• **Results**—At present, 63% of Connecticut's sewage is being treated before discharge. Projects underway will raise this figure to 92%. Others to be undertaken shortly will increase the batting average to 96%. Completion of the current program will provide treatment for 99% of all sewage emptied into Long Island Sound.

Raymond MAKES 5 TYPES OF CONCRETE PILES

1. STANDARD . . . 2. STEP-TAPER . . .
3. PIPE STEP-TAPER . . . 4. COMPOSITE
5. GOW CAISSONS

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations, waterfront construction and harbor and river improvements, also cement mortar lining of pipes by the Centriline Corporation, a Raymond Subsidiary.


DIAMETERS SHOWN OD OF SHELL
DIMENSIONS OF RAYMOND COMPOSITE PILES
STEP TAPER SECTIONS FOR TENON TYPE COMPOSITE PILES USUALLY STARTS WITH #4 OR #5
STEP TAPER SECTIONS FOR WEDGE TYPE COMPOSITE PILES USUALLY STARTS WITH #2 OR #3
Composite Pile in lower right-hand illustration has wedge-type joint with sealing ring forced into head of wood pile. Two types of tenon joints also available.

4. COMPOSITE PILES

The right combination

FOR LONG LENGTH AT LOW COST

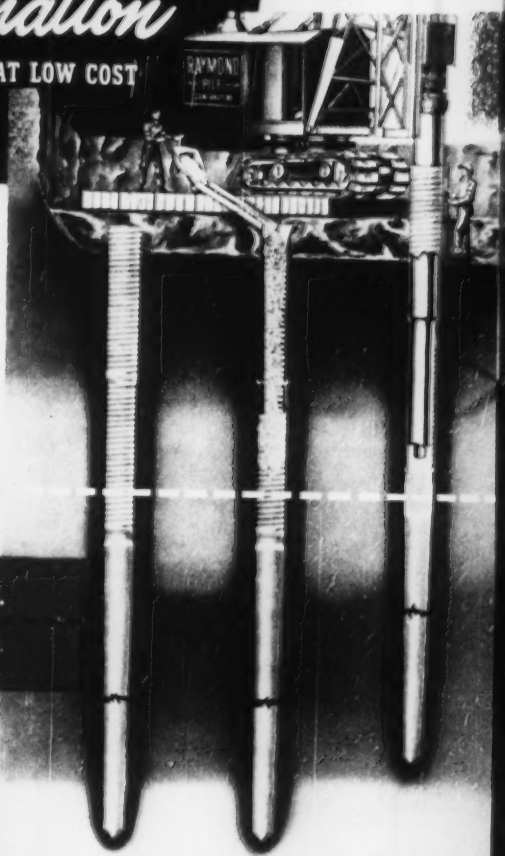
Right, driven wood pile is being followed down by pile shell of concrete section. Center, completed pile driven to resistance, pile shell reduced and filled with concrete. Joint, wedge-type with sealing ring, is below ground-water level. Completed pile is shown at left.

Raymond Composite Piles are used for economy and long length (up to 140 feet). The concrete upper section extends from the permanent water table up to the underside of the footing, thus eliminating the expensive excavation, sheeting and pumping often required with wood piles.

Raymond Composite Piles have solved many deep foundation problems permanently and at minimum final cost. We shall be glad to advise you, without obligation, whether they are suitable for your project.

PERMANENT WATER LINE

RAYMOND PILES MAINTAIN DRIVING RESISTANCE



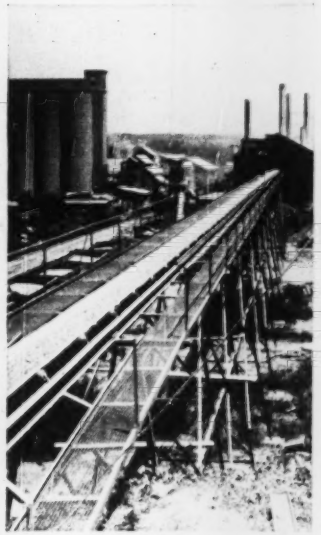
Raymond CONCRETE PILE CO.

140 CEDAR STREET, NEW YORK 6, N. Y.

BRANCH OFFICES: Boston, Syracuse, Philadelphia, Baltimore, Washington, Pittsburgh, Atlanta, Miami, Houston, Kansas City, St. Louis, Cleveland, Chicago, Detroit, Salt Lake City, Portland, San Francisco, Oakland, Los Angeles and principal cities in Latin America.

For heavy duty conveyors—

IT'S TIMKEN®...



For over 25 years Timken tapered roller bearings have given long, trouble-free service in heavy duty conveyor applications—just as they have throughout all industry. A typical example is this 1¼ mile system at the National Cement Company, Ragland, Alabama. With over 10,000 Timken bearings in its Continental Gin Company idlers, this conveyor has been moving 200 tons of cement rock and shale an hour since 1941—and at the lowest ton-mile cost in the company's history! Bearing replacements have been negligible.

AND TIMKEN...

This installation at the Raleigh Coal and Coke Company, Raleigh, W. Va., moves 150 tons of coal per hour on 554 Jeffrey idlers equipped with Timken bearings. Timken bearings have unusual load-carrying capacity—take radial and thrust loads in any combination. Idler friction is practically eliminated. Belt wear is reduced. Effective seals keep lubricant in, dirt and moisture out. Lubrication and maintenance is minimized.

AND TIMKEN AGAIN!

85,000 Timken bearings in Rex idlers kept sand and gravel on the move over the world's longest conveyor for Shasta Dam. It was 9½ miles long and handled over 12,500,000 tons. After this grueling service all the Timken-equipped idlers were transferred to other jobs and are still in operation. There's no other bearing with so much to offer, no other bearing so fully proved. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

Wherever the going's tough industry turns to

TIMKEN

TAPERED ROLLER BEARINGS

Typical application of Timken bearings for conveyor idlers.

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER — BEARING TAKES RADIAL ⬭ AND THRUST ⬭ LOADS OR ANY COMBINATION